Strategic decision making

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The Role of Cognitive Factors and Social Networks

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Strategic Decision Making

The Role of Cognitive Factors and Social Networks

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CHAPTER 1: WITH A LITTLE HELP FROM MY FRIENDS

1.0 Introduction

Individual decision makers in organizations do not make their decisions in a void. Cognitive processes are affected by the social network of the decision maker via the resources, such as information, that are drawn from that network. It is important to study the connection between the sources of information and the information processing mechanisms in strategic decision making (SDM), because it allows a more comprehensive understanding of strategic decision making. Because strategic decisions are not made in a social void, combining insights from the social structure in which the decision maker is embedded and the cognitive underpinnings of strategic choice, fills the gaps inherent to considering the two dimensions in isolation. The interplay between social structure and cognitive processes is complex and most certainly bidirectional. The nature of one's social relations (e.g., breadth of social network) impacts on the cognitive mechanisms engaged in decision processes, while internal cognitive factors (e.g., cognitive motivation) can impact on information search efforts and as such shape the structure of one's social network. In order to advance research on SDM, the studies in this dissertation thus need to aim to discover the extent to which decision makers are cognitively affected by their social network. Networks internal to the organization and networks external to the organization, both professional and personal, were studied to understand how networks help or prevent decision makers assess the decision situation and how they affect the decision outcomes. Conceptually, this means that a decision-specific cluster of actors is expected to influence the SDM formulation process. Most likely, this cluster will vary from decision to decision, and from organization to organization.

The pivotal importance of decision making has long been recognized by scholars conducting organizational and strategy research (March & Simon, 1993; Nutt & Wilson, 2010a). However, there is a lack of convergence of *findings in* and *guidance for* future research by the disparate scholarly work that has been published (Hart, 1992; Papadakis & Barwise, 1997; Papadakis, Thanos, & Barwise, 2010; Rajagopalan, Rasheed, & Datta, 1993). This dissertation focuses on two aspects related to key decision makers, namely individual characteristics and decision makers' embeddedness.

Building on cognitive and social network approaches, the studies assume that

to make effective decisions, a decision makers' mental representation of the decision situation is crucial for the choice that is made and the subsequent action. The assessment of the decision situation faced by the decision maker is influenced by his/her individual characteristics, *and* the decision maker's social network. This is especially important for strategic decisions, because such decision situations are characterized by higher levels of complexity and uncertainty compared to operational and routine decisions. The decision maker is unlikely to possess all information by him/herself and given the importance, others are likely to weigh in. Therefore, the contributions made by the sources of information are vital to draw up a mental representation of the decision situation. Their contributions help the decision maker decide and pursue a course of action. In case of operational and routine decisions, decision makers are likely to be more certain of the accuracy of their decision, and that it will lead to goal achievement or problem solving for the issue at hand. With strategic decisions, less is known and more issues are involved, making it more challenging for an individual decision maker to achieve high levels of accuracy, if this is permitted at all by their organizational and broader environment. However, the combination of the cognitive and social network approaches has not been researched elsewhere in a complementary fashion. Filling this void in the literature is the main ambition of this dissertation.

In line with strategy process and strategic management research, research on SDM formulation processes has focused on either content or process research (Elbanna, 2006; Hutzschenreuter & Kleindienst, 2006; Nutt & Wilson, 2010b). Content research deals with the 'what' of strategy, whereas process deals with the 'how' of strategy making (Papadakis et al., 2010; Pettigrew, 2003). In order to advance the scholarly understanding of strategic decisions, researchers have called for context, process, content, and outcomes to be researched in combination, and in an integrative manner rather than in isolation (Bell, Bromiley, & Bryson, 1997; Papadakis & Barwise, 1997; Papadakis et al., 2010; Rajagopalan et al., 1993). By focusing on key decision makers and the way their social network affects the assessment of the decision situation and its consequences, aspects of context, process and outcomes are combined in this dissertation.

This thesis studies individuals in authority as the central actors in the organization's decision-making system. They are embedded in a social network that provides *access to* and *validation of* information, but which also influences the decision. Building on Mintzberg's (1990) idea of the individual decision maker as the place where the full and current information is located to make the set of

decisions required to determine the strategy of the organization, this cognitive view of the decision maker is extended with the part of the social network that is involved in the decision. This suggests that the decision nerve center as described by Mintzberg (1990) is not limited to the individual in isolation, but also needs to incorporate influences and inputs of those actors in the social network involved in the decision. By including the social network of the decision maker, we do not rely solely on the cognitions of decision makers in order to understand the influence of the internal and external environment of the organization, but explicitly include the bringers and bearers of information and influence. Put simply, the focus lies on individual decision makers and how their social network affects the SDM formulation process and decision outcomes. By explicitly incorporating the social network of the decision maker, the idea in the cognitive approach that external influences are reflected in the cognitions is made more explicit than before.

Previous research has shown that the decision nerve center in organizations is not always limited to one central authority figure as might be assumed from the statement in Mintzberg (1990). It can refer to the top management team as a whole (Jones & Cannella, 2011). However, not all top management team members are involved equally in each and every decision. In such cases, the decision nerve center is composed of that/those individual(s) in the top management team who process both internal and external information relevant or necessary for strategic decisions in organizations. In other words, that subset of top management involved in a specific strategic issue (Jones & Cannella, 2011). Depending on the strategic issue, some members are involved and others are not. Roberto (2003) found that some members appeared to be involved in each strategic decision, whereas others were only involved if the decision affected their functional area, if their expertise was needed, or if they needed to be included. The distinction between core and peripheral top management team members as projected by Roberto (2003) is not necessarily limited to the boundary of the team as previous research appears to suggest. In this dissertation, the decision nerve center is conceptualized as the individual decision maker whose assessment of the decision situation is the point of interest.

The remainder of this chapter introduces the research problem and an introduction to the studies in this dissertation is given in Section 1.1. Section 1.2 describes the research approach and data sources used for the chapters in this dissertation, while Section 1.3 introduces the structure of the dissertation.

1.1 Research problem

Two approaches to decision making form the foundation of this dissertation, namely the cognitive approach and the social network approach. The latter, geared to the adaptive perspective in SDM, explores the role of the systems of relations as they affect decision making through the processes of cohesion, competition and collaboration (Kilduff, 1992). The former, geared to the interpretative perspective in SDM, studies decision making by attributing causal significance to the cognitive structures and processes of key decision makers (Narayanan, Zane, & Kemmerer, 2011).

In essence, the explanation from the cognitive approach focuses mostly on the perceptions and judgments of the decision maker, whereas the explanation from the social network approach concentrates mostly on the system of relations directly around the decision maker. These approaches are often seen as two competing explanations of why beneficial or detrimental decision outcomes are achieved. However, the position taken in this dissertation stresses *the complementary value of these two approaches* rather than the competitive one.

This dissertation builds on the argument that the sources of information are connected to the effectiveness of strategic decisions through information processing mechanisms. This connection is achieved by using the social network approach and the cognitive approach to strategic decision making. The combination of these two approaches connects the sources of information (those actors that influence the key decision maker) to information processing (the interpretation and evaluation of the decision situation), leading to a more detailed explanation of the effectiveness of strategic decisions.

Previous SDM research has not combined both approaches into a single study or into an integrative conceptual model, which is surprising given their high level of presence in the wider scholarly fields of management and organization studies. SDM research focuses on the process of those members of an organization that are involved in providing a judgment on the organization's direction. These persons are considered the deliverers of intelligence and other resources (such as power, support, connections, etc.) for decision making (Nutt, 2007). Intelligence and resources are major inputs and shapers of the mental representation developed and employed to assess the decision situation faced by decision makers. Surprisingly, the extent to which intelligence and resources are explicitly

incorporated into SDM research as *stemming from other parties* is limited to just a few studies. Studies about the composition and diversity of top management teams, such as Amason (1996), Carpenter, Geletkanycz and Sanders (2004), and Edmondson, Roberto and Watkins (2003) implicitly incorporate these. However, the number of studies encountered that explicitly incorporate these factors into one conceptual model, is limited to one single study namely that by Arendt, Priem and Ndofor (2005).

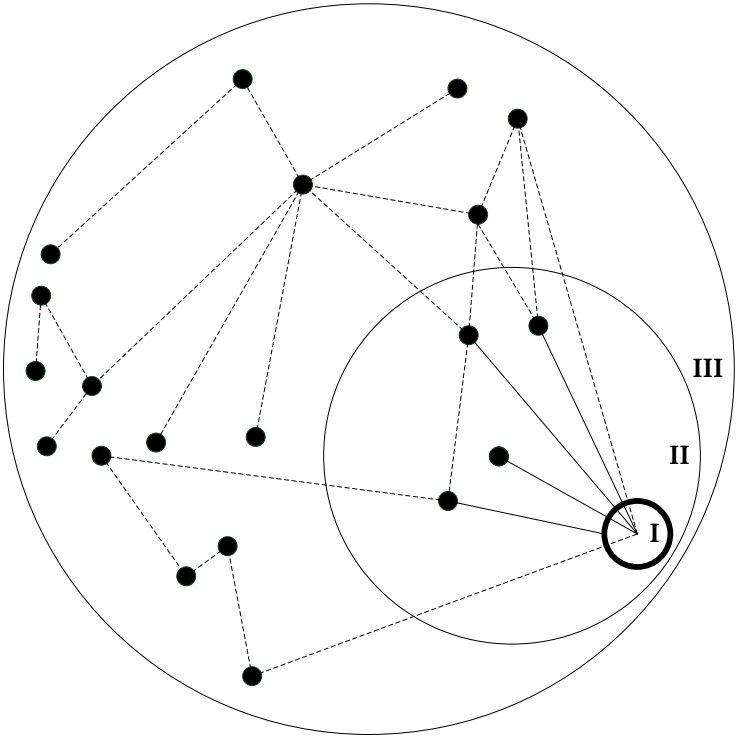
Clearly, there is a need to further explore the origins of intelligence and resources that are cognitively processed by decision makers. The connection between which actors influence the key decision maker and his/her interpretation and evaluation of the decision situation is one of the main questions posed in the behavioral strategy literature. Powell, Lovallo and Fox (2011) call for research after how context in combination with cognitive errors lead to judgmental errors. Their interest lies in improving executive judgment by learning about how the psychological architecture of an organization affects strategic choice. More concretely, how do organizational and other contextual characteristics affect decisions and their outcomes through the cognitions of key decision makers? Additionally, Gavetti (2012) calls for research that helps build a theory of behavioral strategy that allows for the understanding of how key strategists are able to deliver competitive advantage by spotting strategic opportunities that are not that easily identifiable and cannot be easily acted upon by them or strategists from competitors. Departing from the idea that opportunities that are close and directly visible to the key strategist are also visible to strategists of competitors, Gavetti (2012) calls for the investigation of the ways in which the abilities of key strategists lead to the identification of such opportunities. How do their abilities allow them to (have the members of their organization to) act on them, and how do their abilities allow them to make opportunities legitimate and therefore shape or construct the opportunity space for their organization? By conducting studies on the connection between the social network and cognitive approach to strategic decision making, the behavioral strategy literature is enriched with knowledge in two areas. First, actors that are necessary to act upon strategic opportunities are incorporated in the decision making equation. Second, actors that need to judge whether strategic opportunities are legitimate are incorporated in the equation. Previous studies did not incorporate these actors to understand their effect on the interpretation of the decision situation and its consequences. In practice, this

informs key decision makers on how their assessment of the decision situation will be affected.

As research shows, people in an organization who participate in strategic decisions do not involve themselves to the same extent in each and every decision. Furthermore, some people may be formally or informally excluded from certain decisions and not others (Jones & Cannella, 2011; Roberto, 2003). This variation in extent and presence of influence of other actors needs to be incorporated in the exploration of the origins of intelligence and resources that are cognitively processed by decision makers. As decision makers operate in highly complex and uncertain environments, they need to search for additional intelligence and resources via their social ties. Their individual knowledge does not suffice to tackle decisions in these situations. To explain beneficial and detrimental decision outcomes, the complementarity of the cognitive and social network approaches is suitable since it explains how and why decision makers arrive at the decisions they take by incorporating the modes of processing the inputs, as well as the variation in sources of these inputs.

This complementarity is essential in explaining why decisions are taken, and why objectively similar circumstances lead to different decisions. Figure 1.1 provides a visual representation of the above. Social networks are the relatively stable and enduring social structure of which a decision maker is a member. In Figure 1.1 these members are symbolized by the nodes. The connections between members are resembled by links between nodes. The dotted lines resemble connections that are present but not active in the decision situation facing the decision maker. The social network contains resources that can and will be transported to and from members through the connections they have. Roman numeral 'III' represents the area in the figure of the total social network of one person, containing resources available directly and indirectly to the members of the network. Not every member of the network will have resources, such as specific information or expertise, that are useful for each and every decision. Furthermore, some decisions will affect the interests of members, while others will not. In other words, the members involved in decision A, say a merger, may not be involved or may be differently involved in decision B, say a reorganization. If the member is a lawyer from a specialized labor law firm providing advice to the key decision maker on how to tackle certain issues with regard to the personnel, he or she may have valuable knowledge in both cases. However, if the reorganization does not involve changes in the personnel in terms of lay-offs, the

Figure 1.1 *Embeddedness of key decision makers*



labor law specialism might not be required. In such cases, it may be more important to include the technical competence of engineers in the decision formulation process. Roman numeral 'II' represents the area in the figure that indicates the ad hoc nucleus, the set of members with the connections through which resources for the decision are selected and transported. The members involved and their contributions are not fixed for each and every decision situation (in subsequent decisions for one decision maker as well as in similar decisions facing different decision makers), and account for different perceptions of the decision situation and through inputs for the decision formulation process. However, the decision maker who receives the inputs, here represented by Roman numeral 'I', still has to process the inputs in order to formulate a decision. As well as the inputs, the cognitions and other characteristics of the individual

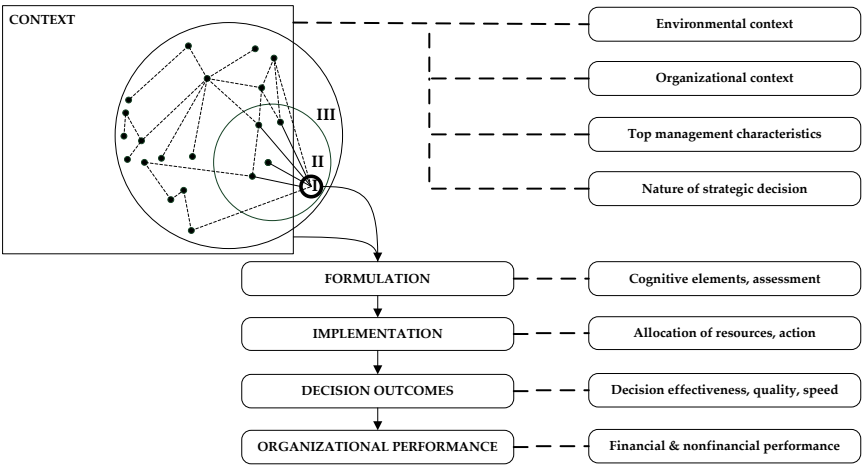
determine how these will be combined and synthesized into an assessment of the decision situation. This assessment leads to the formulation of a decision that, once taken and implemented, results in decision outcomes such as quality and effectiveness (Amason, 1996; Dean & Sharfman, 1996).

Little is known about which part of the total network becomes actively involved in a specific decision and how that nucleus affects the cognitive processing of the individual decision maker. This study will explore how decision outcomes are created through the intelligence and resources that are processed by the decision maker and which primarily originate in the social network that is activated in a certain decision situation (the nucleus). The inputs for the cognitions of decision makers vary with the part of the social network that becomes active. Mental representations and decision outcomes vary not only with the decision maker or the decision problem. They will also vary depending on the social network of the decision maker and more specifically with the nucleus that becomes active in the decision process.

Beyond the cognitive processing of intelligence and resources *by*, and the embeddedness *of* the decision maker in the social network, other factors affect the SDM process. These are mainly found in the context of strategic decisions, which consists of the nature of the strategic decision, top management characteristics, organizational context, and environmental context (Papadakis et al., 2010; Rajagopalan, Rasheed, Datta, & Spreitzer, 1997). The explanation of Figure 1.1 may lead to the suggestion that decision makers are primarily subject to the direct influence of their social network in formulating their decisions, and thus decision outcomes are a simple consequence of that influence. However, attention must be paid to what previous SDM research shows us, which is that aspects of context such as uncertainty, hostility, decision motive, decision frequency, organizational size, planning formality, level of education, etc. (Chou, Dyson, & Powell, 1998; Elbanna & Child, 2007a, 2007b; Papadakis, Lioukas, & Chambers, 1998), can also act as antecedents on decision formulation and decision outcomes. Moreover, previous stock-taking papers call for testing moderating effects of context on a variety of other relationships in SDM research, including on the relationship between decision formulation and decision outcomes, and between decision outcomes and organizational performance (Papadakis & Barwise, 1997; Papadakis et al., 2010; Rajagopalan et al., 1993). Hence, as well as the exploration of the complementarity of the cognitive and social network approaches, studies in this dissertation will include effects from the context of strategic decisions other than

those originating from the social network. Figure 1.2 is a visual representation of the above and extends Figure 1.1 with the wider context of strategic decisions, next to the total social network, and the flow of the decision process (based on Papadakis et al., 2010).

Figure 1.2 *Strategic decisions: relation between context, process (formulation and implementation), and outcomes*



The studies in this dissertation do not focus on every aspect of the decision process. Our interest lies mainly in the complementary value of the social network and the cognitive approach to SDM, in order to understand the consequences of how context influences the cognitive process of formulation and its relationship with decision outcomes. The overarching researching question is:

What is the influence of social networks on strategic decision making?

To answer this question, four sub questions have been researched:

a. What is the influence of social networks on the decision nerve center?
b. What is the influence of social networks on the mental representation of the decision maker?
c. What is the influence of social networks on decision outcomes?
d. How do social networks get accessed by different decision makers?

The complementary value of the cognitive and social network approaches is relevant for understanding why the formulation process unfolds as it does. It is the combination of the parties that provide intelligence and resources with the way these are interpreted in forming an assessment of the decision situation that leads to the actions following the decision. These result in decision outcomes that are the prelude to organizational performance. In line with Dean and Sharfman (1996) and Vidaillet (2008), we argue that the decision process matters for decision outcomes under the assumptions that different processes lead to different choices, and that different choices lead to different outcomes. Studies such as Rodrigues and Hickson (1995) and Dean and Sharfman (1996) support this. SDM processes influence the choices made and not all choices are equally good. Most research in SDM assesses the quality of the decision against its ultimate consequence, organizational performance. This is what Baron and Hershey (1988) described as the outcome bias. This bias refers to the evaluation of a decision based on information that was not available at the time of decision. In SDM research, this has been described as the discrepancy between the quality of decision outcomes and organizational performance (Nutt & Wilson, 2010b; Vermeulen & Curşeu, 2008). The goal of this dissertation does not lie in describing or explaining the discrepancy. However, the relatively high level of attention in previous research for the ultimate outcome rather than the actual outcome of the formulation process does spur interest in the decision outcomes. Furthermore, possible distorting effects could occur between the SDM process and organizational performance, but are usually not taken into account or controlled for directly. This does not suggest that these research efforts are judged invalid in terms of internal validity by this author or by any other standard. Rather, it emphasizes the need to understand key variables that increase our understanding of the relationship between the formulation process and organizational performance. For example, while studying isolated decisions, one can conclude that they are bad for organizational performance, but that does not mean they do not make sense in the overall strategic framework of the organization (Huff & Reger, 1987; Vidaillet, 2008). Studying decision outcomes allows differentiation between the results following the decision itself compared to the result following the unfolding of the decision in a broader playing field with a different time horizon. If the internal logic and analysis of the formulation process, taken together with the context of

the strategic decision, leads to desired outcomes (e.g. intermediate goal achievement), the decision itself can be understood to be successful.

A decision of high quality does not automatically translate into good organizational performance. In this dissertation, the focus is on decision outcomes, because understanding these as a consequence of the formulation process enables the development of the next step in the research on the relationship between decision outcomes and organizational performance. Research into this relationship has taken place, but not often. In their review of a decade of literature (1997-2008), Papadakis et al. (2010) identified only one study, that of Baum and Wally (2003), and one specific call for research on moderating effects on the relationship between decision outcomes and organizational performance by Forbes (2007). Hence, a thorough understanding of decision outcomes and how these are related to context and process helps build a foundation for studying the relationship between decision outcomes and organizational performance. The following section discusses the research approach.

1.2 Research approach

Strategic decisions are decisions "committing substantial resources, setting precedents, and creating waves of lesser decisions; as ill-structured, non-routine and complex; and as substantial, unusual and all pervading" (Dean & Sharfman, 1996, pp. 379–380), based on Hickson, Butler, Cray, Mallory and Wilson (1986), Mintzberg, Raisinghani and Théorêt (1976) and Schwenk (1988a). The complicatedness and complexity of SDM stems from the wide variety of constructs involved, but also from the different approaches adopted to modeling and measuring it. Different perspectives on SDM exist, such as the linear perspective, the adaptive perspective, and the interpretive perspective (Rajagopalan et al., 1997). Combining the aspects these three perspectives requires a model with sufficient generality and detail to accommodate the variety of constructs. Comprehensive review frameworks, such as those of Rajagopalan et al. (1993) and Papadakis et al. (2010), combine the aspects of these perspectives and provide direction (Ginsberg & Venkatraman, 1985). Therefore, SDM as a process is generally defined as "the process by which a strategic decision is made and implemented and the factors which affect it" Elbanna (2006, p. 2). Two areas have recently been gaining attention due to their multidisciplinary nature and

possibilities they offer to link different levels of analysis in strategy and SDM research. These are the developments in the areas of behavioral strategy and strategic cognition.

Powell et al. (2011) describe the behavioral strategy approach as the merging of cognitive and social psychology with strategic management theory and practice. It combines realistic assumptions about human cognition, emotions, and social behavior to the strategic management of organizations. This approach combines the qualities of the economic and behavioral approaches to strategy, namely how to act with intelligence and efficacy in strategic contexts (Levinthal, 2011). Intelligence here does not solely refer to deliberative reasoning, but alternatively refers to adaptive learning, selection mechanisms and imitative processes. Gavetti (2012) seeks to conceptualize the role of key decision makers as agents who influence their own and others' mental processes in pursuing opportunities, i.e. human cognition in context. Doing so requires the micro nature of these mental processes and the socio-structural context in which they occur to be understood jointly. As Brandenburger and Vinokurova (2012) comment, this is not a plea to reduce strategy to a cognitive representation bounded by language and expressions maintained by decision makers and their fellow strategists, but rather to see how both their representations are more or less connected and logically moldable to capture and act upon the relevant elements of the decision situation that is faced. In addition, Winter (2012) suggests that organizational consideration should not be seen as static or given, but rather included actively, as these too will impact on the relationship between cognitive aspects and organizational performance.

Decision makers are those individual agents that have the authority to make decisions on behalf of the organization as a whole or its constituent parts (such as a division or strategic business unit) concerning its direction. The mental processes of key decision makers and why they are related to organizational performance is one of the focal points in strategic cognition research (Narayanan et al., 2011). Strategic cognition focuses on the linkages between cognitive structures and decision processes in strategic management with respect to strategy formulation and implementation. It ascribes causal importance to structures and processes of cognition in the explanation of strategy and, hence, the competitive advantage of firms and other outcomes (Narayanan et al., 2011). In terms of the cognitive perspective on SDM, it highlights the importance of key decision makers' perceptions and judgments in studying the links between the

environment, strategy, and structure for the decision situations they face (Schwenk, 1988b). Within the wider area of behavioral strategy, strategic cognition is basically concerned with the application of knowledge representations in formulating and implementing strategic decisions and applying them to particular strategic problems (Curşeu, Vermeulen, & Bakker, 2008; Curşeu & Vermeulen, 2008; Narayanan et al., 2011; Schwenk, 1988b). Based on their review, Narayanan et al. (2011) draw attention to the fluidity of strategy frames based on which decision makers engage the decision situation. More specifically, they challenge the often-held assumption in strategic cognition research that there is one relatively stable frame for all decision problems.

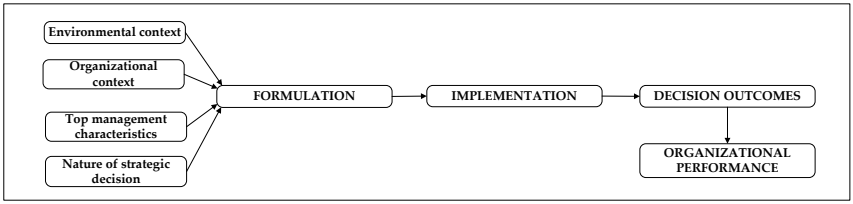
Research in strategic cognition suggests that these frames are situation-specific, that decision makers can hold several frames, and that these can change due to specific triggers in the decision situation (Gilbert, 2006; Louis & Sutton, 1991; Narayanan et al., 2011). Research in entrepreneurial SDM raises a similar question on how strategic decisions are represented in the cognitive system of the decision maker, and which characteristics of these representations lead to high-quality decisions (Curşeu & Vermeulen, 2008). In general, cognitive representations are conceptualized as mediators between situational cues and behavior (Curşeu, 2008; Wood & Bandura, 1989), implying that information processing as a consequence of the cues is decision-situation specific in terms of leading to a choice (Curşeu, 2008; Walsh, 1995). A viable route for research would thus be to explore how context aspects (situational cues) affect the relationship between the key decision maker's assessment of the decision situation, along various dimensions on decision and organizational outcomes. This suggests that the interpretative and adaptive approaches are particularly appropriate for this line to be pursued.

The general conceptual model of SDM is the backdrop for the empirical studies in this dissertation. It is also found in seminal studies and comprehensive reviews in SDM, such as Mintzberg et al. (1976), Rajagopalan et al. (1993), Bell et al. (1997), Rajagopalan et al. (1997), and Papadakis et al. (2010). Figure 1.3 shows this model.

The model in Figure 1.3 is the modified version of Figure 1.2, with fewer details. It captures the flow of the decision process in a snapshot manner, meaning it leaves out the dynamic components that have been found in the literature in terms of feedback loops, sequential decision rounds, repeated

decisions, and process phase iterations (Lejarraga & Gonzalez, 2011; Mintzberg et al., 1976; Rajagopalan et al., 1993). The four context aspects, *environmental context*,

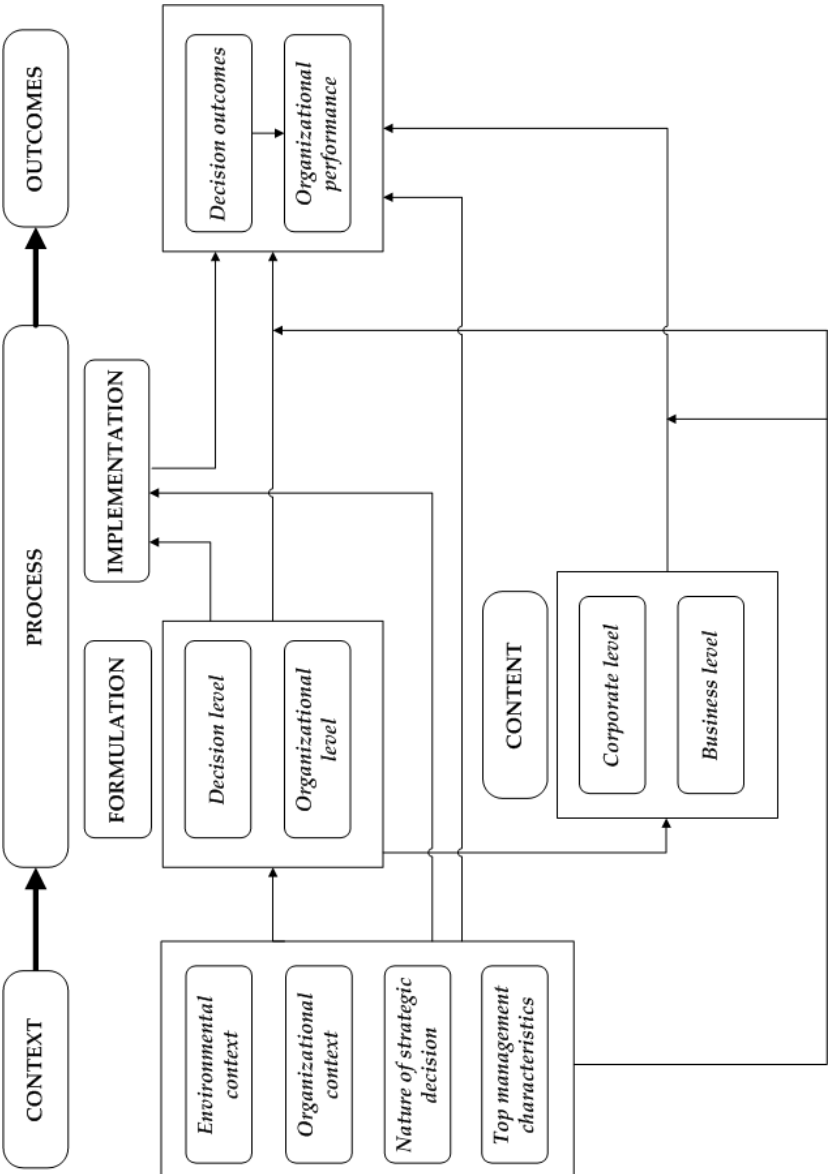
Figure 1.3 *General conceptual model SDM*



organizational context, *top management characteristics*, and *nature of strategic decision* are presented as the antecedents in Figure 1.3. Environmental context refers to the external environment (environmental characteristics), organizational context refers to the internal environment (organizational characteristics), top management characteristics refer to the characteristics of the decision makers on an individual or collective basis, and nature of strategic decision refers to the characteristics of the decision. Research has shown that the role of context aspects is not limited to that of antecedent, and can also be included as moderators. *Formulation* is the part of the SDM process in which the inputs are cognitively processed and judged by the decision maker that leads to the decision. In this dissertation, *implementation* as the allocation of resources and action part of the SDM process is not researched separately. *Decision outcomes* are the results of decision formulation and implementation, and represent direct organizational and social consequences of decision activity. Lastly, *organizational performance*, which is not researched separately within this dissertation, is the actual outcome of the functioning of the organization compared to its inputs and intended outcomes, such as goals.

SDM research is often characterized as dealing with a process that is complex and of a multilevel nature (Poole & Van de Ven, 2010). As stated above, not all aspects of the general conceptual model will be included in the studies. Below, more details about the individual chapters and their foci, visualized in relation to the general model of Figure 1.3, is provided. Also, the underlying data collection for the chapters is presented. In the respective chapters, more detailed information is provided on the collection, sample and analyses (see also Appendices A and B).

Figure 1.4 *Integrative framework of strategic decisions (based on Papadakis et al., 2010, p. 34)*

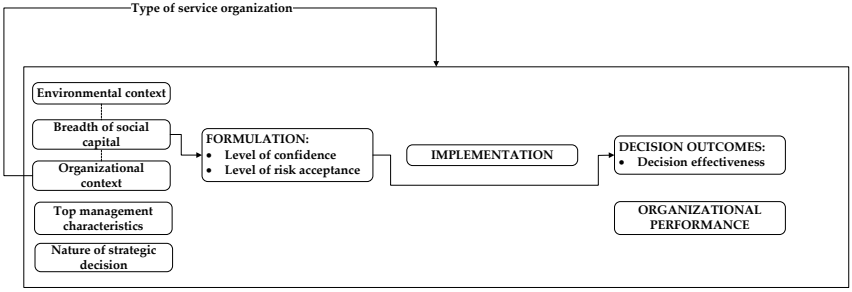


1.3 Structure of the dissertation

The thesis consists of one literature-based chapter and three empirical chapters. The literature-based chapter (Chapter 2) builds on 159 conceptual studies in the SDM field. The conceptual studies were gathered systematically and analyzed (please refer to the first two paragraphs of Sections 2.1 and 2.2, and full Appendix A for more details) to identify which papers are staples in the SDM field. The review aims to identify the foundations incorporated in other conceptual SDM research, and to identify the conceptual emphases of studies in the field. By analyzing the papers, it is possible to establish whether the focus of this dissertation is supported by the literature. The chapter uses the integrative framework (see Figure 1.4) based on Papadakis et al. (2010) to map the literature.

The empirical chapters on the influence of the social networks of decision makers on SDM formulation and decision outcomes (Chapter 3 and Chapter 4) are based on a dataset that was acquired from EIM Business Policy and Research, which carried out a cross-sectional survey commissioned by the Dutch Ministry of Economic Affairs. The aim of this data collection was to collect descriptive statistics and explore how decisions in small and medium sized enterprises (SMEs) are made. The data are used to test the effects of the activated social network on decision outcomes through the evaluative judgments of the decision maker in Chapter 3 (see Figure 1.5). The activated social network, as measured by breadth of social capital in Chapter 3, consists of participants from the

Figure 1.5 Conceptual model Chapter 3

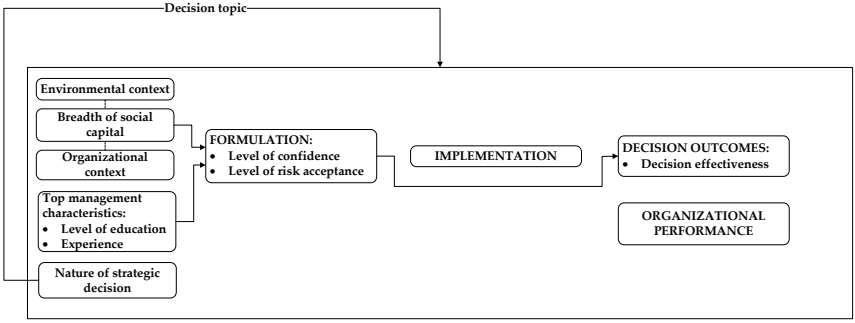


organizational context (e.g. people who work for the organization) and from the environmental context (e.g. industry relations). As decision outcome, decision effectiveness is used. The moderation of context factors is tested in Chapter 3 by

zooming in on type of service organization, which is an organizational context factor.

In Chapter 4, the data are used to test the effects of the activated social network of the decision maker, next to individual characteristics, on decision outcomes through the evaluative judgments of the decision maker (see Figure 1.6). The activated social network was similarly measured with breadth of social capital as in Chapter 3, and top management characteristics were included as individual characteristics. These are grouped under the header of human capital. As decision outcome, decision effectiveness is used. The moderation of context factors is tested in Chapter 4 by zooming in on decision topic, which is a context factor from nature of the strategic decision.

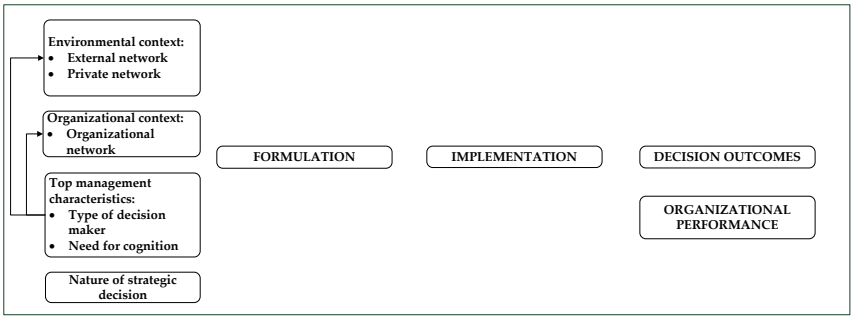
Figure 1.6 *Conceptual model Chapter 4*



The empirical chapter (Chapter 5) on how the type of decision maker and the cognitive motivational trait need for cognition affect information search behavior in the social networks of decision makers is based on data gathered by means of a cross-sectional survey (see Appendix B for the survey). This survey has been developed to gather data about the characteristics and relational setting of key decision makers in SMEs and large organizations in order to test whether there are differences between decision makers in information search behavior in different parts of their social networks. The chapter tests whether decision makers with specific individual characteristics search different parts of their external environment (represented by private and professional networks) and internal environment (represented by the intra-organizational network) differently in terms of information for the SDM process (see Figure 1.7). Chapter 5 tests the

connections between different parts of the context of strategic decisions, which is essential to understand because the information necessary to formulate strategic decisions is in the network. Since participants in the network are possible deliverers of the intelligence and resources for SDM, it is relevant to find out where decision makers obtain theirs from, especially because some parties have to be consulted or will be interfering on their own behalf. This means that it is imperative to learn where intelligence and resources come from.

Figure 1.7 *Conceptual model Chapter 5*



To conclude, this dissertation is built up as follows. Chapter 2 presents the results of the literature review on conceptual SDM literature. By means of a citation analysis and a construction of a network of sets of SDM constructs, the core papers of the field, and the most important construct sets that serve as predictors and phenomena explained, were identified. Chapters 3 through 5 present the empirical studies of this dissertation. In Chapter 3, the moderating effect of different types of service SMEs on the relationship between social capital, evaluative judgments and decision effectiveness is researched. In Chapter 4, the moderating effect of type of decision on the relationship between human capital, social capital, evaluative judgments and decision effectiveness is researched. Chapter 5 contains an explanation of how decision makers in SMEs and large organizations and decision makers' level of cognitive motivation inform us on the differential information search behavior of these decision makers. Chapter 6 consists of the conclusions of this dissertation and suggestions on how to further pursue the research agenda on SDM.

CHAPTER 2: THE INTELLECTUAL CORE OF THE SDM FIELD: A CITATION ANALYSIS AND NETWORK OF SETS OF CORE CONSTRUCTS

2.0 Introduction

In order to bring together dispersed knowledge on, and advancements in, strategic decision making (SDM), authors regularly take stock of the literature. The insights of such integrative and systematic reviews of the literature are used to pave the way for future research and determine a research agenda for the foreseeable future (see e.g. Papadakis & Barwise, 1997 and Elbanna, 2006). Timely and regular reviews serve to fuel SDM research and to adjust its course, to address interesting topics, and seek collaboration with adjacent fields to benefit from their methodological and theoretical progress. However, this incremental approach to SDM research delivers a patchwork and piecemeal image of the field, bringing with it the danger of continuous reinvention. The focus of this dissertation (see the research problem in the previous chapter) was derived from such stock-taking works. The aim of this chapter is to develop an overview of the state of the field and determine to what extent the focus identified in the previous chapter is supported by the broader literature.

In order to organize the overview, Figure 1.4 (which was based on Papadakis et al. 2010) indicates which aspects are focused on. By organizing the literature on the integrative framework for strategic decisions, the overview will allow for the inclusion of the broad range of SDM research in the areas of context, process, content and outcomes. By being comprehensive in terms of range, the overview will allow for conclusions in the area of SDM rather than a single subpart of the field. In this way, the emerging picture through the overview of the field will show to what extent the focus of this dissertation is in line with the opportunities identified in the wider literature, and which opportunities present themselves in other areas of SDM research. By means of this overview, the contribution of this dissertation is placed in its wider academic arena.

To fulfill the aim, an approach rooted in bibliometrics, in combination with social network analysis in two stages, is taken. In the first stage, the theoretical, conceptual and review papers (hereafter, synthesizing papers) from the SDM field are gathered and linked through citation analysis to identify the core papers in the field of SDM (see Section 2.1). The citation analysis carried out here is what

Leydesdorff and Amsterdamska (1990) describe as an inquiry in the social organization of the SDM community, in which citations are regarded as links between the works of authors.

In the second stage, these papers are mapped on the integrative framework based on Papadakis et al. (2010) from Figure 1.4 to find out which parts of the SDM process have received much attention compared to parts that received less (see Section 2.2). The citation analysis serves as the basis for mapping concepts in the papers on the integrative framework for strategic decisions. The conceptual focus of each paper included in the citation analysis is determined. Based on this focus, it is attributed to a part of the integrative framework, or several parts, if more than one focus applies. These two stages allow mapping of the selected literature in terms of social organization and conceptual emphasis. In both stages, social network analytic techniques are used in order to identify the core papers and the core interests of the field, providing an overview of the state of the field.

2.1 Identification of core papers in the field: A citation analysis

The citation network approach from Kas, Carley and Carley (2012) is the foundation for the citation analysis. It captures the breadth and width of conceptual work in the SDM field. A citation analysis is based on the premise that the documents cited by authors in their work are considered important in the development of their research (Ramos-Rodríguez & Ruíz-Navarro, 2004). The aim of this section is to determine which papers are staples in the SDM field in terms of providing the foundations incorporated in other SDM research, and what their foci are. To identify these papers, the approach detailed in Appendix A was followed.

In short, the synthesizing papers that held 'strategic decision making' as a search term in the title or topic in the Social Sciences Citation Index (1956-2011) were identified. Backward (checking reference lists of the identified studies) and forward snowballing (in the Social Sciences Citation Index) took place to identify additional papers that cover SDM related research. Non-published papers were included (that is, those papers that were not appointed to a formal issue yet, i.e. forthcoming; or working paper versions that in terms of title convincingly corresponded to specific publications in our set). These non-published, forthcoming and working papers were identified through snowballing backwards and forwards. This is also the main reason to conduct the identification of

citations manually; it prevents exclusion of these papers (electronic indexing sees these papers as different entries rather than the same entry while their intellectual contribution is likely to be the same). Also, the manual approach does not create dependence on what is indexed electronically. For example, author names and titles that are entered differently in reference lists are technically a completely different entry that may not be recognized by automatic indexing. A case in point is Stubbart's (1989) paper, which was found under a slightly different title in Dutton (1993) and Child (1997) ('managerial cognition' had become 'cognitive science'), having the exact same reference save these two starting words of the title. Furthermore, the manual approach allows a wider variety of journal publications to be included. This procedure ultimately led to 159 synthesizing papers being identified.

The approach taken to construct this citation network differs in three ways from other citation analysis approaches. First, there was no limitation to a fixed set of academic journals. Limiting oneself to a fixed set of academic journals to execute the citation analysis, as is done by for example Ramos-Rodríguez and Ruíz-Navarro (2004), provides a crude demarcation of where relevant research is published. The aim of this analysis is to identify the core papers in the SDM field and not the core papers in certain journals that publish SDM research. Hence, the approaches with regard to search strategy to citation analysis taken by Nerur, Rasheed and Natarajan (2008) and Schildt, Zahra and Sillanpää. (2006) are followed. They use core journals to start their search, but do not limit themselves to those journals.

Second, the choice was made to focus on synthesizing papers, including meta-analyses, and not empirical papers. Other citation analyses did not distinguish between these two groups of papers. The reason why only synthesizing papers are included is twofold. First, the empirical SDM literature is aimed at testing theories or mapping specific corners of the real world in which SDM takes place that were previously not, or insufficiently, covered. The non-empirical, synthesizing papers aim to bring together the wealth of research findings on a specific topic or over a certain time period. These works have already integrated existing empirical work leading to a more coherent overview, already weighing and reconciling the value of diverging findings where possible. Second, synthesizing papers draw on previous academic research to set up future research. Although empirical papers present future research opportunities as well, their focus is mostly on the specialty or part of the theory that was targeted

by the research. This is valuable, but would lead to a specification of the niches in the SDM field rather than an overview of the state of the field in terms of where attention should be directed. That is why the state of the SDM field is mapped using the synthesizing papers to arrive at an overview that does not become lost in, or blurred by, the field's niches.

The third difference refers to the focus on a topical field rather than a disciplinary field. To capture the intellectual structure of a field, a co-citation analysis of works from that field is the way forward (Culnan, 1987; White & McCain, 1998). The approach opted for in this chapter refrains from choosing a disciplinary field to analyze, as that would limit the chances of identifying foundational papers for SDM because of its multidisciplinary nature. Furthermore, the citation analysis solely linked works that are SDM related rather than full reference lists (Eom, 1996). This leads to the exclusion of general management and organization literature, leading the citation analysis to be more focused on the topic.

One limitation to the approach taken is the choice that was made to focus solely on journal papers. The availability of journal papers through the digital disclosure of journal archives by publishers, open access journals and authors makes it possible to access the material, and for others to replicate this study. Although studies published in classic and recent books do not necessarily differ from synthesizing journal papers, they are less widespread and are not systematically indexed in databases, such as the Social Sciences Citation Index. In order to prevent the gaps this may bring, it was opted to focus solely on journal papers. This choice is not without consequence. First, recent stock taking books such as the ones by Nutt and Wilson (2010b) and Hodgkinson and Starbuck (2008) are excluded. In terms of bringing together disparate streams of research, these edited volumes have much to offer. Second, classic books are excluded as well. Books such as Simon's (1997), March and Heath's (1994), and Allison and Zelikow's (1999) that comprise basic building blocks on the knowledge on SDM are omitted. Third, in those cases that seminal books or book chapters are published, the papers that are drawn from them contain the core of the seminal work. However, they are overlooked in terms of citations because authors choose to cite the book or book chapters. This may lead to an underestimation of the importance of specific work in SDM. For example, the book on the Bradford decision-making studies by Hickson et al. (1986) was partially packaged in Hickson's (1987) paper publication, but the latter did not receive as many citations

as did the former. The 1986 book publication to the 1987 paper publication ratio is 6.7:1[1] in Google Scholar and within the set of papers used for the citation analysis; the ratio is 5.3:1.

The network is based on a symmetrical adjacency matrix, which was visualized by using the Visone software, (Brandes & Wagner, 2004), version 2.6.4. Figure 2.1 shows the citation network that was developed by manually tracking citations across the 159 studies.

The nodes of the citation network in Figure 2.1 are the papers identified by the search process and the links represent the citations, i.e. the link between two nodes indicates that one paper cites the other. The links are undirected, meaning that they do not take into account the direction of the citation. This was done in order to incorporate the papers that were not formally published yet, but were on SDM and referred to in the reference lists as forthcoming or working papers. Citations made and citations received are only counted when these are to other papers within the set. This procedure allows the capture of the part of the SDM field that is contained in a paper, illustrating its encapsulated intellectual community compared to the other papers.

In Appendix A, the same network can be found, but then with identifiers for each node (see Figure A.1). The network in Figure 2.1 is the whole network, including all nodes (papers) and links (cites) in the dataset. The black nodes represent the papers that were found by using the initial search string 'strategic decision making' in the title or topic field in the Social Sciences Citation Index. The grey nodes represent the papers that were found by backward or forward snowballing.

Figure 2.1 shows four isolate black nodes (bottom left hand of the picture), papers that were identified with the search string, but not citing or being cited by any other paper in this set. The enlarged octagon shaped nodes represent the synthesizing papers that score high on several centrality measures (see Table 2.1). A total number of 15 papers direct much of the traffic in the network. The central area of Figure 2.1 is cropped and enlarged to Figure 2.2.

[1] The ratio has been calculated by looking up the respective works on Google Scholar (http://scholar.google.com) and dividing the number of citations to the book by the number of citations to the journal paper. The ratios were calculated with data retrieved on 28 December 2012.

Figure 2.1 *Citation network of synthesizing papers in SDM: whole network*

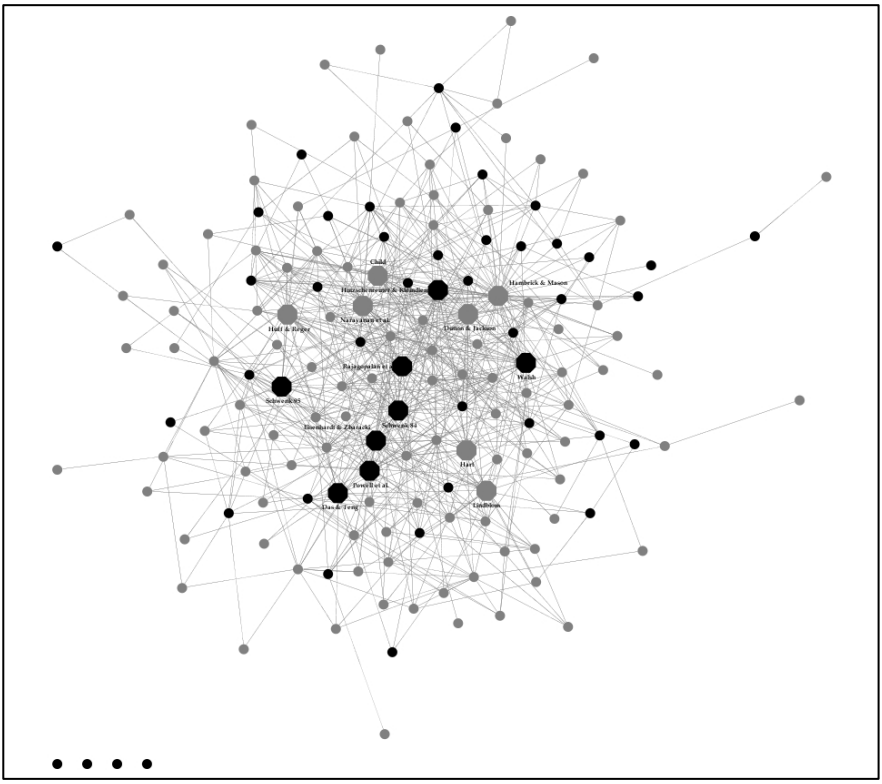


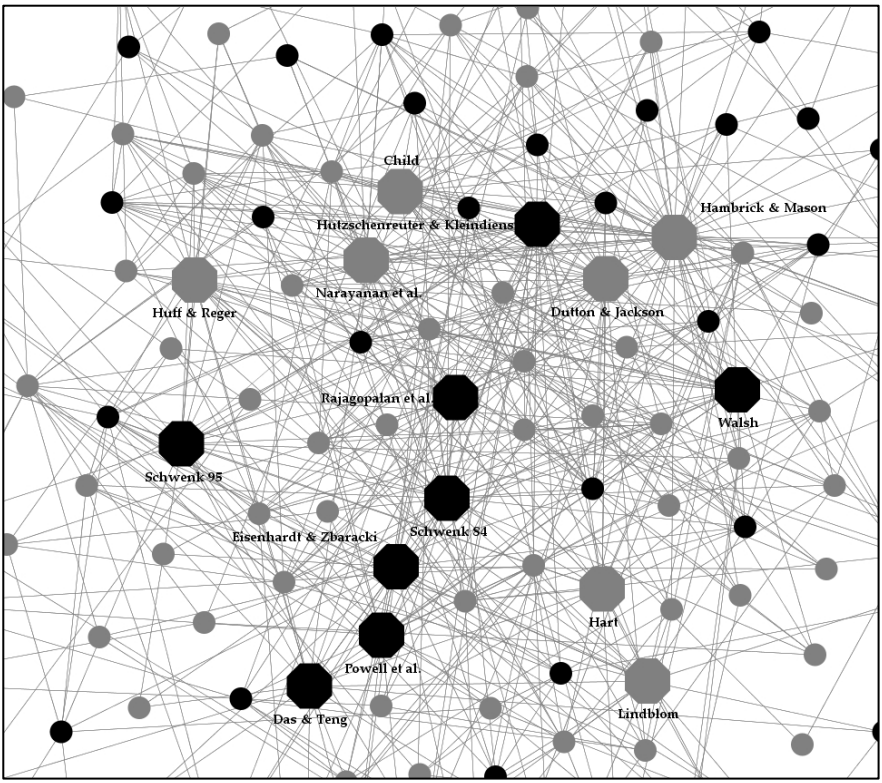
Figure 2.2 shows the central area of the whole network from Figure 2.1. It shows the central papers more clearly. The full results of the citation analysis in terms of centrality scores can be found in Table A.3 in Appendix A. Table 2.1 presents the results of the citation analysis in terms of the most central papers in the SDM field identified through the procedure in Appendix A. The network analytical measures used for identifying the core synthesizing papers are eigenvector, betweenness, closeness and degree centrality. Based on Kilduff and Brass (2010), these measures inform us on which papers are central in terms of being connected to centrally located papers (eigenvector centrality), which papers connect other papers who have no direct connections (betweenness centrality), which papers are

able to reach many other papers (closeness centrality) and which papers have many ties to other papers (degree centrality).

Table 2.1 displays the top ten scores for each centrality measure. It contains the different centrality measures (upper row) and a ranking of the synthesizing papers that have those top ten scores. The scores are not included in the table, but the synthesizing papers going with the scores are. The papers presented in bold print are papers initially identified when the search was based on strategic decision making as part of the title or topic. The papers in regular print were identified through backward or forward snowballing.

The table allows for four general observations. First, the table presents a mix of papers identified through initial search terms (60%) and snowballing (40%).

Figure 2.2 *Citation network of synthesizing papers in SDM: cropped central area*



From the 15 unique papers that make up this central set across several centrality indicators, close to half is found directly through the initial search terms used that directly address SDM. Although this may be a consequence of the choice to only include synthesizing papers, it is striking in the sense that it means about half of the relevant literature in terms of theorizing and providing buildings blocks is found under a different denominator. It does, however, confirm the porous boundaries of the SDM research field, as works from outside the direct topical sphere apparently gain importance, while not having the exact same focus. Second, the most central paper by far for each centrality measure, Hambrick and Mason (1984), introduces the upper echelons perspective. This perspective zooms in on upper tiers of organizations and essentially holds that strategic choices are a reflection of their characteristics and ensuing behaviors. Furthermore, their paper was only identified after backward snowballing took place. Third, three sets of papers can be found in these centrality rankings. Reading the 15 synthesizing papers and organizing their foci, three sets of topics emerged (see Table 2.2). The first set comprises papers that cover the observable characteristics of decision makers (Hambrick & Mason, 1984), their cognitive biases, heuristics and underlying processes (Das & Teng, 1999; Schwenk, 1984, 1995; Walsh, 1995), and interpretation/emergence of strategic issues (Child, 1972; Dutton & Jackson, 1987). In the second set, much attention is devoted to integrative frameworks and their constituent building blocks (Hutzschenreuter & Kleindienst, 2006; Narayanan et al., 2011; Rajagopalan et al., 1993). The third and final set revolves around the characterization of actor and process models (Eisenhardt & Zbaracki, 1992; Hart, 1992; Huff & Reger, 1987; Lindblom, 1959; Powell et al., 2011; Schwenk, 1995). Fourth, the synthesizing papers in Table 2.1 leave out some authors. The authors in Table 2.1 published synthesizing papers that were picked up. Apparently, this is not a mirror of those authors conducting much of the empirical research, let alone those authors who find themselves more on the cutting edge between academia and practice. Using the same identification procedure described in Appendix A in the Social Sciences Citation Index for empirical papers, in terms of the initial search term, showed that authors such as Westphal (e.g. Carpenter & Westphal, 2001), Nutt (e.g. Nutt, 1993), Eisenhardt (e.g. Eisenhardt, 1989), and Busenitz (e.g. Busenitz & Barney, 1997) lead the way in terms of numbers of most empirical publications on SDM in core journals, but this list of (co-)authors does not correspond with the authors of the synthesizing papers in those core journals, save for Eisenhardt in this case. It should be noted that the list of authors of

Table 2.1 *Highest ranking synthesizing papers based on eigenvector, betweenness, closeness, and degree centrality*[2]

Measure / Position	Eigenvector	Betweenness	Closeness	Degree
1	Hambrick & Mason (1984)	Hambrick & Mason (1984)	Hambrick & Mason (1984)	Hambrick & Mason (1984)
2	**Schwenk (1984)**	**Schwenk (1984)**	**Hutzschenreuter & Kleindienst (2006**	**Schwenk (1984)**
3	Dutton & Jackson (1987)	**Hutzschenreuter & Kleindienst (2006)**	**Schwenk (1984)**	Child (1972)
4	**Walsh (1995)**	**Schwenk (1995)**	**Schwenk (1995)**	**Walsh (1995)**
5	**Hutzschenreuter & Kleindienst (2006**	**Eisenhardt & Zbaracki (1992)**	Huff & Reger (1987)	**Hutzschenreuter & Kleindienst (2006**
6	**Narayanan et al. (2011)**	**Das & Teng (1999)**	**Walsh (1995)**	Dutton & Jackson (1987)
7	Child (1972)	Child (1972)	**Narayanan et al. (2011)**	**Schwenk (1995)**
8	**Schwenk (1995)**	Huff & Reger (1987)	Dutton & Jackson (1987)	**Narayanan et al. (2011)**
9	Hart (1992)	**Rajagopalan et al. (1993)**	**Das & Teng (1999)**	**Eisenhardt & Zbaracki (1992)**
10	Huff & Reger (1987)	**Narayanan et al. (2011)**	**Powell et al. (2011)**	**Das & Teng (1999)** Huff & Reger (1987) Lindblom (1959) Hart (1992)

authors for the empirical papers concerns a frequency count of amount of publications from 1956-2011. Surprisingly, prominent writers about strategy and SDM on the cutting edge between academia and practice are absent, both in the synthesizing papers list and the empirical papers list. Authors such as Mintzberg

[2] Papers found in initial search in bold print, papers found through snowballing in regular print.

(e.g. Mintzberg, 1987; 1973; Mintzberg, Quinn & Ghoshal, 1991) and Prahalad (e.g. Prahalad, 2010; Hamel & Prahalad, 1989; Prahalad & Hamel, 1990) do not appear in the top of the synthesizing papers list, although these and similar authors are usually considered as drivers and shapers of strategic thinking.

The three sets of papers found after the centrality analyses were used as the organizing principle for Table 2.2, together with the different centrality measures. The sets were placed in the columns, and juxtaposed with the measures in the rows. To distinguish between the relative heights of the score of the papers and to determine which set deserves relatively more attention and emphasis because they are at the top range of the centrality measure, the rows are divided in two sub rows each. The top sub row refers to the top five-score papers, the bottom to the bottom five-score papers. Basically, this leads to the columns from Table 2.1 being transposed to the rows in Table 2.2 and the individual papers attributed to the set of scores they correspond with, split in a top 5 position and a bottom 5 position.

Table 2.2 reorganizes Table 2.1 to bring the content of the 15 papers to the fore that make up the top ten scores after the centrality analyses have been performed on the total citation network. The papers show a skewed distribution over the three sets. Furthermore, the papers from the first and second set are found in the top five for every centrality measure, whereas that is not the case with the third set.

Regarding the first set, which contains papers about observational characteristics of decision makers, their cognitive biases and heuristics as well as cognitive processing, and interpretation of strategic issues, it is clear that synthesizing papers covering these aspects take an important position in the overall field. The papers in this set focus predominantly on the actors making the decisions, whether individuals (Das & Teng, 1999; Dutton & Jackson, 1987; Hambrick & Mason, 1984; Schwenk, 1984, 1995; Walsh, 1995), groups (Child, 1972; Hambrick & Mason, 1984; Walsh, 1995), organizations (Child, 1972; Walsh, 1995), and industry (Walsh, 1995). In itself, this is not surprising, as the actors involved in making the decisions are considered pivotal in the way decision situations are perceived and handled. It is especially through interpretation and categorization (Dutton & Jackson, 1987) and information processing (Das & Teng, 1999; Schwenk, 1984, 1995; Walsh, 1995) that differences in handling decision situations arise. Demographic and other observational traits (such as functional background), together with cognitive traits, act as givens that filter and distort

Table 2.2 Sets of synthesizing papers (spread over two pages)

Sets / *Centralities*	*Set I: observable characteristics of decision makers, cognitive biases, heuristics and underlying processes, and interpretation of strategic issues*	*Set II: integrative frameworks and their constituent building blocks*	*Set III: characterization of actor and process models*
Eigenvector Top 5 *connect to centrally located papers*	- observable characteristics (1) - cognitive processing, biases & heuristics (2, 5) - interpretation strategic issues (3)	- strategy process (9)	none
Bottom 5	- cognitive processing, biases & heuristics (4a) - interpretation strategic issues (6)	- strategic cognition (10)	- process models (4b, 12) - actor models (14)
Betweenness Top 5 *connect other papers who have no direct connections*	- observable characteristics (1) - cognitive processing, biases & heuristics (2, 4a)	- strategy process (9)	- process models (4b, 13)
Bottom 5	- interpretation strategic issues (6, 7)	- strategic decision-making process (8) - strategic cognition (10)	- process models (12)

Table 2.2 is continued on the next page

Sets	*Set I:*	*Set II:*	*Set III:*
Closeness Top 5 *reach many other papers* Bottom 5	- observable characteristics (1) - cognitive processing, biases & heuristics (2, 4a)	- strategy process (9)	- process models (4b, 12)
	- cognitive processing, biases & heuristics (2, 5, 7) - interpretation strategic issues (3)	- strategic cognition (10)	- actor models (15)
Degree Top 5 *many ties to other papers* Bottom 5	- observable characteristics (1) - cognitive processing, biases & heuristics (2, 5) - interpretation strategic issues (6)	- strategy process (9)	none
	- cognitive processing, biases & heuristics (4a) - interpretation strategic issues (3, 7)	- strategic cognition (10)	- process models (4b, 11, 12, 13) - actor models (14)

Legend:

Set I:	Set II:	Set III:
1. Hambrick & Mason ('84)	8. Rajagopalan et al. ('93)	4b.Schwenk (95)
2. Schwenk ('84)	9. Hutzschenreuter & Kleindienst ('06)	11. Lindblom (1959)
3. Dutton & Jackson ('87)	10. Narayanan et al. ('11)	12. Huff & Reger (1987)
4a. Schwenk ('95)		13. Eisenhardt & Zbaracki ('92)
5. Walsh ('95)		14. Hart ('92)
6. Child ('72)		15. Powell et al. ('11)
7. Das & Teng ('99)		

perception of what is going on in the decision situation and what should be done (Hambrick & Mason, 1984). In groups and organizations, these traits and processes come together in interaction. Unifying interests and preferences in dominant coalitions, as well as more static properties such as organizational structures constrain and enable, i.e. filter, the flows of information and signals to and from decision makers. From this, it can be derived that mental representations of decision situations are highly subject to individual and collective traits and processes and account for differences between the mental representation of a decision situation between actors, although they face similar situations. The distinction between reality and its evaluation is important, because it indicates whether decision makers will at all be aware of (aspects of) the decision situation or not (Child, 1972), and their interpretation will lead to categorization of the decision situation, evoking a string of actions to deal with it (Dutton & Jackson, 1987). Obviously, papers in this set provide important building blocks on the actors that make decisions.

The second set of synthesizing papers revolves around integrative frameworks and their constituent building blocks. Strikingly, the synthesizing papers in the second set originate from a single journal, namely *Journal of Management*. These papers draw together research in order to identify and combine the components of the framework to construct the connections between different parts of the process they seek to lay out. Although the papers in this set have a separate focus, namely SDM process (Rajagopalan et al., 1993), strategy process (Hutzschenreuter & Kleindienst, 2006), and strategic cognition (Narayanan et al., 2011), the lay-out and components are relatively similar. The emphasis and conceptual domains underlying the framework and occupying the components differ to some degree, as well as the labeling. For example, whereas all three frameworks distinguish their respective core process as a key component in the framework, Rajagopalan et al. (1993) zoom in on decision process characteristics and do not explicitly incorporate implementation, Hutzschenreuter and Kleindienst (2006) zoom in on strategy process characteristics and incorporate implementation as part of their core process, as well as Narayanan et al. (2011) who zoom in on the role of cognition in strategy formulation and implementation. This reflects the traditional tendency to focus on formulation in process research rather than implementation as the core of the strategy / strategic decision process (Papadakis et al., 2010). However, the components and lay out of the frameworks follows the basic flow of context

aspects (characteristics pertaining to actors involved, issue characteristics, organizational context and environmental context) influencing the core process (including formulation and implementation), process outcomes (e.g. decision effectiveness, resource allocation, level of commitment) and performance outcomes (organizational performance and economic outcomes), which corresponds with the framework on strategic decisions of Papadakis et al. (2010). The frameworks presented by Hutzschenreuter and Kleindients (2006) and Narayanan et al. (2011) explicitly recognize the recurring, dynamic nature of the process by including feedback loops from the output side of the respective frameworks to the input side, whereas Rajagopalan et al. (1993) and Papadakis et al. (2010) only do this implicitly by including reference in its components to previous states of, for example, organizational strategies and decision familiarity. Obviously, this set of papers shows the development of integrative frameworks and the contained intellectual domain regarding their specific focus. They include many studies in the topical field of SDM that are part of this set. Content wise, integrative framework papers are helpful in placing and embedding research undertakings without taking a specific theoretical departure point or à priori conceptualization of the component or (partial) lay out focused on by that study.

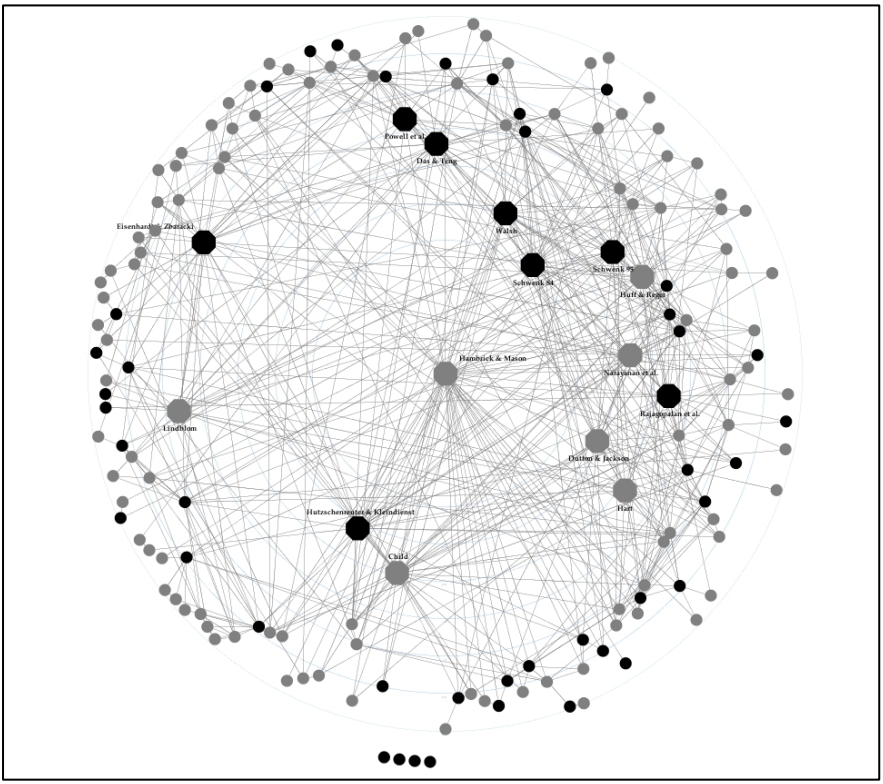
The third set of synthesizing papers focuses on elements or overviews of ideal type actor and process models. The papers from this set, with the exception of Huff and Reger (1987) and Powell et al. (2011), are mostly in the bottom tier of the centrality scores, which is striking given the number of papers in this set (6 out of 15). Schwenk (1995) deals with the phases of the process of SDM, to which most of the synthesizing papers in this set relate. The ideal type actor and process models zoom in on how the process is expected to unfold, and how actors go about making the decision, given certain assumptions about the (human or collective) nature of decision makers, their (organizational) embedding, and connection with the external environment. The distinction between actor and process models, as described above, is murky in this set of synthesizing papers. The properties of actors and unfolding of process are intertwined, as an actor model requires a stylized embedding and external environment in order to show the expected consequences of such an actor in action. Lindblom (1959) is an example of such a work, pitting the more classical rational actor model and process model (root model in his terms) against a more incrementalist model (branch model in his terms) for decision makers in public

organizations. The work by Huff and Reger (1987), Eisenhardt and Zbaracki (1992), and Schwenk (1995) explicitly seek out the connection by such actor and process types and connect them to strategy and SDM dimensions. Hart's (1992) typology on strategy making presents fives styles that include the roles of both top management and organizational members, differentiating how the roles co-exist or complement in the process. Powell et al. (2011) make the case for understanding strategy content and process by using the combination of cognitive and social psychology with strategic management to combine realistic assumptions about human cognition, emotions, and social behavior. The thrust of the work done in this set is to provide positioning to the conception of actor and process in decision making in general, and SDM in particular. The shared message of the papers in this set is the move towards more realistic actor and process models compared to the classic rational model. However, these papers do not claim to have found the simple solution but rather contend that they have provided some conceptual relaxation, or relevant conceptual amplitude, necessary to map actors' behavior and processual unfolding more realistically.

The three sets of synthesizing papers described above are not mutually exclusive and are interconnected. The set with the highest number of papers is the set revolving around observational characteristics of decision makers, their cognitive biases and heuristics as well as cognitive processing, and interpretation of strategic issues, but that does not mean that the papers in the other two sets do not include aspects of these. However, the sets are distinguished based on their main focus. Actors as decision makers constitute the most active and variable element of the process, as their characteristics, interaction with the internal and external environment (and the actors in those environments) provides the most traceable and determining source for understanding why decisions turn out the way they do. The placement of the decision and its most active and variable element, i.e. the decision maker, in the overall framework and the positioning in terms of conceptualization of the basic relevant parameters of the actor and process provides an indication of the mix of ingredients that needs to be used and recognized in the decision situation under study.

The four centrality measures that were calculated based on the citation network and used to identify the core papers in Table 2.1 and categorized in Table 2.2, inform us on the positioning of the sets of synthesizing papers within the total set included in the analysis in this chapter. The sets of papers were found to

Figure 2.3a *Citation network of synthesizing papers in SDM: centrality lay out eigenvector centrality*



cluster in the top ten scores form the core of the field in terms of intellectual threads running through SDM synthesizing research. This means that synthesizing papers in the field of SDM on these and other foci are connected to either, or several, of these papers found in the sets. This makes the sets core in the sense that reference to one or more to these sets is often made in synthesizing papers, whether it is a content-based or ceremonial citation. This is visually supported in Figure 2.2, in which the papers that belong to the top ten scores on the different measures are zoomed in on. Whether these sets in terms of conceptual domain they cover are stable or shifting from one era to another is an interesting question for follow-up research, but for now one could say that the papers and the sets they cluster into are pivotal in recognizing what area

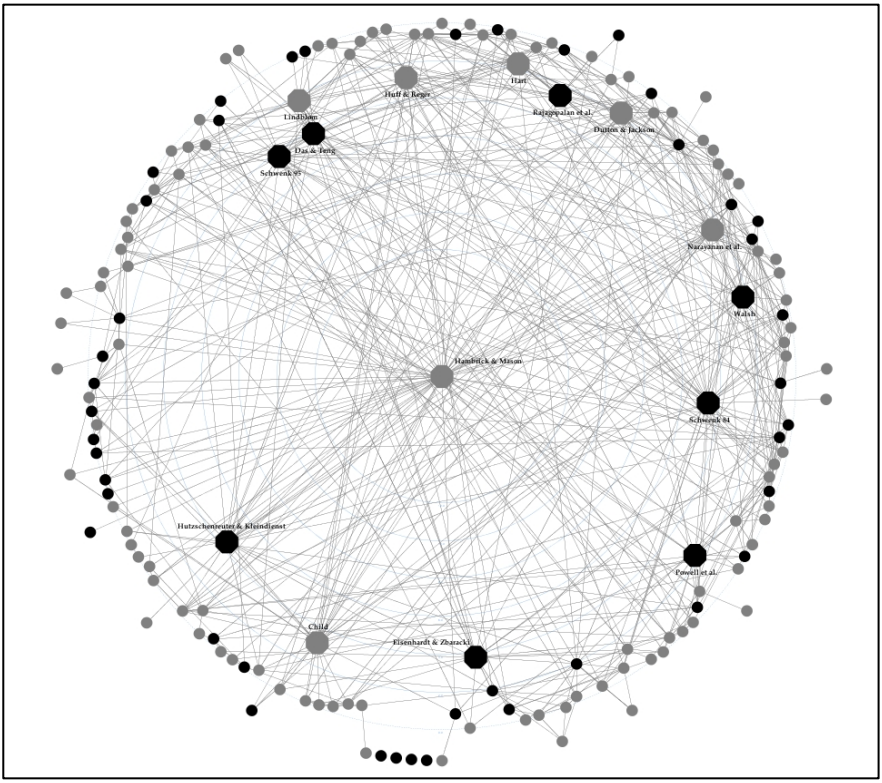
research is mainly related to. Ultimately, they are the linking pins that connect the synthesizing papers of the citation network.

For the papers scoring high on eigenvector centrality, this leads us to conclude that the papers in the three sets tend to occupy the center of the citation network next to one another, being the most important papers as a consequence of being linked to papers that relatively cite and are cited by other papers. Figure 2.3a shows the citation network in a centrality layout based on eigenvector centrality. The very center is occupied by Hambrick and Mason (1984). That paper, and the other papers from the top ten scores on all centrality measures, can be recognized by their octagon and enlarged shape. On inspection of the eigenvector row in Table 2.2, the papers in the top five scores belong to the first set of synthesizing papers, being the set on observational characteristics of decision makers, their cognitive biases and heuristics as well as cognitive processing, and interpretation of strategic issues, save one paper from the integrative frameworks and its constituent building blocks set. In other words, the first set constitutes the core of the intellectual community of the synthesizing papers in terms of being connected to centrally located papers.

For the papers scoring high on betweenness centrality, this leads us to conclude that the papers in the three sets of papers tend to provide the main connection between the synthesizing papers that have almost no other connections. This leads to the connection of otherwise disconnected groups, so-called cliques, indicating an important role for connecting papers and allowing them to form a connected rather than a separate intellectual flow. Figure 2.3b shows the citation network in a centrality layout based on betweenness centrality. The very center is once again occupied by Hambrick and Mason (1984). On inspection of the betweenness row in Table 2.2, the papers in the top five scores belong to all three sets, with the emphasis on the first set. In other words, this is what research is related to, or built on, that finds itself on the fringes of the SDM research field (in terms of synthesizing papers). These fringes can represent doublings of earlier research (and hence, not making an impact due to other papers receiving more recognition for that contribution) or may be waiting to be integrated in, or picked up more elaborately, by other synthesizing papers. The latter would make sense for fairly recent papers, whereas the former would make sense for older papers. Put simply, the synthesizing papers with a relatively high betweenness centrality broker the intellectual flow to and from papers that are otherwise not cited, i.e.

synthesizing papers are informed about other such papers rather than ignoring or being unaware of them.

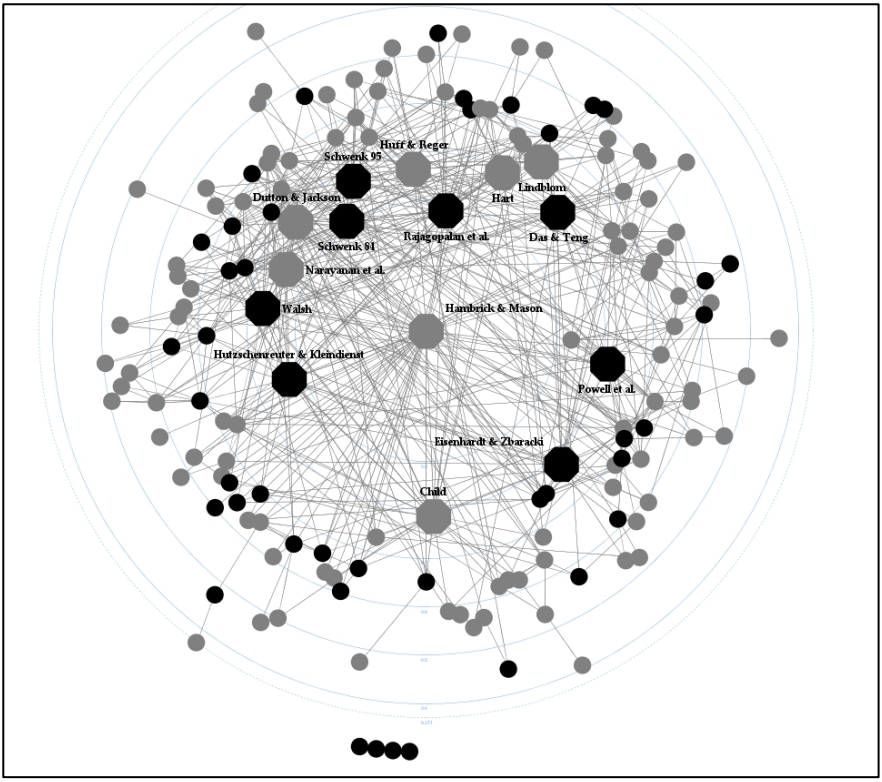
Figure 2.3b *Citation network of synthesizing papers in SDM: centrality lay out betweenness centrality*



Closeness centrality allows for the identification of sources that transmit or acquire information in the citation network. Figure 2.3c shows the citation network in a centrality layout based on closeness centrality. Hambrick and Mason (1984) again occupy the center. On inspection of the closeness row in Table 2.2, the papers in the top five scores belong to all three sets, with a small emphasis on the first set. In other words, those papers are close to all other papers without being necessarily directly connected to them through backward

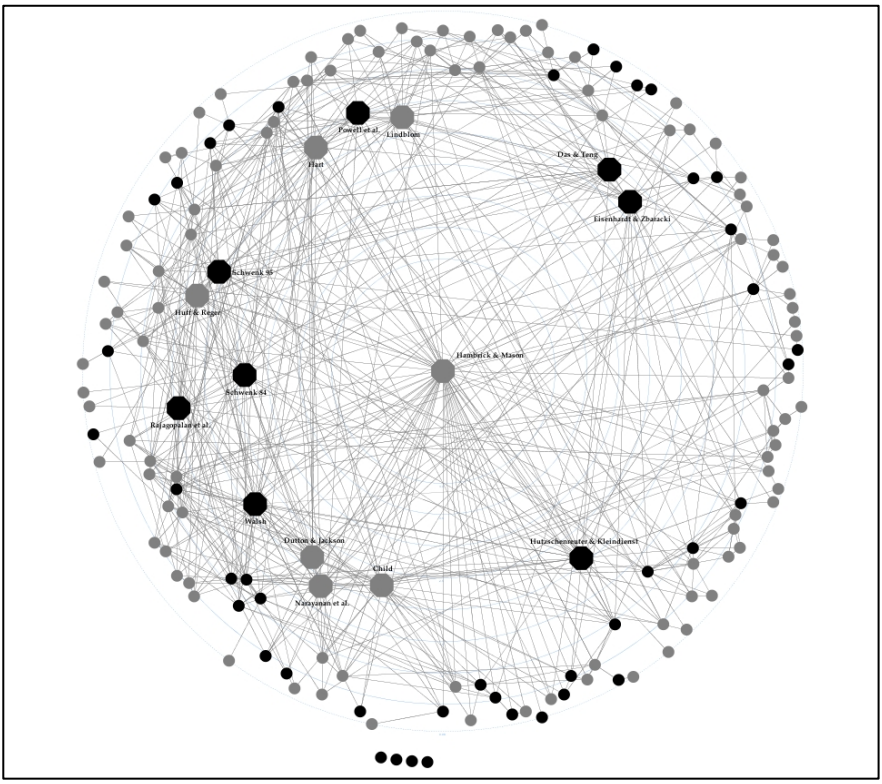
or forward citation. Papers that have a high closeness centrality are directly, or indirectly, related to many other papers in the citation network.

Figure 2.3c *Citation network of synthesizing papers in SDM: centrality lay out closeness centrality*



Regarding the degree centrality, the citation analysis was undirected and, as a consequence, degree centrality can only be assessed as a whole. Papers that score high on degree centrality score high on the number of connections they have with other papers, meaning that the sum of cites and citations to other synthesizing papers is relatively high compared to the other papers in the set. Degree centrality combines indegree and outdegree centrality by including both backward and forward citations. This has the advantage that the recency bias is

Figure 2.3d *Citation network of synthesizing papers in SDM: centrality lay out degree centrality*



somewhat downplayed, which refers to the tendency of authors to cite recent papers (Kas et al., 2012). It also prevents papers that cite many other papers from becoming central merely because they have many backward citations. By keeping these together, the degree centrality reflects the intellectual community of which a paper is part of in terms of number of publications in the SDM field that are incorporated in or cite that synthesizing paper. Figure 2.3d shows the citation network in a centrality layout based on degree centrality. The center is occupied by Hambrick and Mason (1984). On inspection of the degree row in Table 2.2, the papers in the top five scores belong mainly to the first set, with one paper from set two also making the top five scores. This means that the

synthesizing papers about the most active and variable element cite most other synthesizing papers and are being cited most by other papers.

From the citation analysis, it can be concluded that the combination of (1) observational characteristics of decision makers, their cognitive biases and heuristics as well as cognitive processing, and interpretation of strategic issues; (2) integrative frameworks and their constituent building blocks and (3) elements or overviews of ideal type actor and process models were emphasized in non-empirical research. Papers that are staples in the field (1) focus on the most active and variable element in strategic decisions, the decision making actor and its characteristics. Papers that are staples in the field (2) focus on the placement of the decision making activity in integrating frameworks, relegating it to a certain area of inquiry. Papers that are staples in the field (3) focus on the positioning of the actor or process in terms of modeling, conceptualizing the relevant parameters of the actor and process by indicating the relevant conceptual amplitude, necessary to map the actor and unfolding process more realistically. The next section analyses the contents of the set of 159 synthesizing papers used for the citation analysis to construct a network of sets of core constructs.

2.2 Identifying conceptual emphasis in the field: Network of sets of core concepts

The citation analysis in the previous section identified the core sets of papers of the field. For the mapping on the integrative framework, the network of the core approach based on Khan, Moon and Park (2011) is used. In this section, the 159 papers from the citation analysis are mapped on the integrative framework from Figure 1.4. The papers were all coded in terms of which part of the integrative framework is discussed in the paper. This allows the identification of the conceptual emphases of studies in the field.

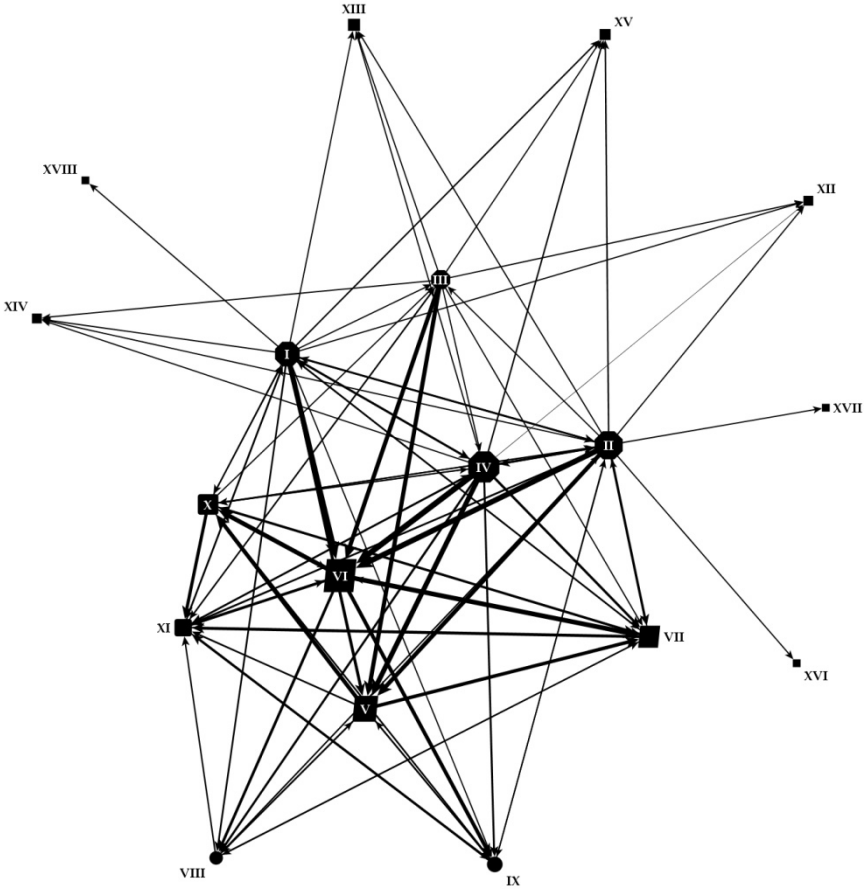
The approach taken was the following. Each time one of the 159 papers worked with concepts that corresponded with one of the parts of the model, that concept was scored. For example, if a paper zooms in on *intuition* as a trait of a manager, the set of concepts 'top management characteristics' (context), scored a '1'. If *rationality of a decision* is focused on, than it would be coded in the set of concepts 'decision level' (formulation process) with '1'. If this paper does not work with any other concepts that relate to the sets of concepts in the

framework, these would all score '0'. If this paper would work with several additional concepts (e.g. three top management characteristics, such as age, education and job position) that fall into an already scored set of concepts, the score for that set would stay '1'. This means that the concepts were not weighted in this respect. Although an argument can be made for weighting in this way, it was opted not to do so to ensure that integrative reviews that cover many studies, such as Huff and Reger (1987), Eisenhardt and Zbaracki (1992), Rajagopalan et al. (1993), Schwenk (1995), Hutzschenreuter and Kleindienst (2006) and Narayanan et al. (2011) would not lead to sets of concepts that can be characterized as obese. Namely, they would receive relatively high scores from synthesizing papers that cover many studies that work with concepts belonging to those sets of concepts. Furthermore, given the differences in depth a concept is covered within and between papers, weighting delivers a complicated scoring scheme surpassing the goal of finding out what has been emphasized.

Next to the concepts, relationships between sets of concepts were also scored in a similar way, as long as causality between concepts that were part of two different sets of concepts was claimed. For example, if a paper would use age of a decision maker as a predictor for the degree of political behavior in a decision situation in a proposition, the relationship between 'top management characteristics' (context) and 'decision level' (formulation process) would be coded with '1'. Absent relationships were coded with '0'. In this manner, both the concepts were scored in the set of concepts they belonged to and the relationships to the set of relationships they belonged to. Although this approach of lumping differing concepts in sets of concepts and differing relationships in sets of relationships is a coarse reduction of the variety in the SDM field, it guides us to where attention should be directed. Given that the coding takes place based on the descriptions in the papers and not the labels of the concepts, variations in definitions can warrant different concepts. Hence, to prevent overcomplicated pictures, the coding was limited to the sets of concepts and causal relationships.

A final challenge was to score those papers that proposed moderating effects on relationships. In terms of scoring, these relationships were treated as the direct relationships in the previous paragraph. However, a separate entry was created for each set of relationships proposed to moderate another relationship between two sets of concepts. For example, if organizational size (organizational context) is proposed to moderate the relationship between age of a decision

Figure 2.4 *Visualization of links of conceptual studies and literature reviews on integrative framework*



Legend:

Context:
I: Environmental context
II: Organizational context
III: Nature of strategic decision
IV: Top management characteristics
Content:
VIII: Corporate level
IX: Business level

Process:
V: Formulation decision level
VI: Formulation organizational level
VII: Implementation

Outcomes:
X: Decision outcomes
XI: Organizational performance

Legend (continued):

Moderation effects:
XII: Process formulation decision level --> Outcomes organizational performance
XIII: Process formulation organizational level --> Outcomes organizational performance
XIV: Process formulation decision level --> Outcomes decision outcomes
XV: Formulation organizational level --> Outcomes decision outcomes
XVI: Outcomes decision outcomes --> Outcomes organizational performance
XVII: Context top management characteristics --> Outcomes organizational performance
XVIII: Process formulation decision level --> Implementation

maker (top management characteristic) and implementation (implementation process), a separate entry was created for the relationship, so that the moderating effect could be connected to the relationship. The visual display of the results of mapping the direct relationships between the sets of concepts mapping can be seen in Figure A.2 in Appendix A, a slightly modified version of the integrative framework of Figure 1.4. The sets of concepts are the same, but they have been moved a bit to provide some space for the lines that needed to be drawn. The number of connections between the sets of concepts increased substantially compared to Figure 1.4, leading to a non-instructive visualization, save for increased complexity. This led to the exclusion of the figure from the main text, but it has been included in Appendix A to make the comparison with the original framework of Papadakis et al. (2010) possible for the reader, and to illustrate the unsuitability of using the classic approach to conceptual modeling in case the number of papers is substantial.

Figure 2.4 provides a social network graph of the interrelations between the sets of concepts. The data from the mapping exercise underlying Figure A.2 was used to make this picture, now including the moderating effects. The network is based on an asymmetrical adjacency matrix, which was visualized by using the Visone software, (Brandes & Wagner, 2004), version 2.6.4., The size of the nodes corresponds with the relative frequency a concept from a paper was scored in that set of nodes. The width of the links corresponds with the relative frequency a link from a paper was scored as a link between that set of nodes. Similar advantages and disadvantages as noted with Figure A.2 regarding the coarseness of this strategy apply. The exception is the inclusion in Figure 2.4 of the moderating effects and separation of the causal links if there are more directed links from one node to another than the other way around. The visualization informs us on the

relative dominance of sets of concepts and their interrelations. The nodes are numbered with Roman numerals, which are explained in the legend. Roman numerals I to XI correspond with the sets of concepts in Figures 1.4 and A.2. The numerals XII to XVIII resemble those relationships between sets of concepts that were moderated by another set of concepts. The moderating effects could not be incorporated in Figure A.2, but are in Figure 2.4. Regarding the relationships between sets of concepts, there are single headed arrows and double headed arrows. The direction of the arrow indicates the direction of the causality. This means that with single headed arrows, such as the one running from 'corporate level' (content) to 'organizational performance' (outcomes), at least one study proposed a causal effect from a concept in the set of concepts 'corporate level' on a concept in the set of 'organizational performance'. Double headed arrows, such as the one running between 'environmental context' (context) and 'organizational context', indicate that there is at least one study proposing that there is a causal effect of 'environmental context' on 'organizational context', and vice versa. However, these two causal effects need not be from the same study. In some cases there are two single headed arrows between nodes. If this is the case, then the causal relation in one direction differed in number of occurrences in the set of 159 papers from the other direction.

Visually, the context part of the integrative framework is strongly represented. The nodes representing the environmental context (I), organizational context (II), nature of strategic decisions (III), and top management characteristics (IV) appear to play a major role as they occupy the central part of the visualization together with process implementation (VII), process formulation on the organizational (VI), and decision levels (V). Face value, these sets would constitute the network of the core sets of constructs as the main conceptual focus of the SDM field. The outcome sets organizational performance (XI) and decision outcomes (X) follow, and minor roles are reserved for the content on corporate (VIII) and business (IX) levels. The moderating effects play a very minor role (XII to XVIII). This visual interpretation thus tells us that connections between the parts of the integrative framework are not equally distributed between the sets of concepts. Moreover, additional links and alternative directions have been mapped in Figure 2.4, which were not originally mapped in the original framework.

The relatively large node sizes are found for process formulation organizational level (VI), context top management characteristics (IV), context organizational context (II), process formulation decision level (V), and context

environmental context (I). This means that these sets of concepts were incorporated in the papers that were analyzed most often. Three network analytical measures are presented in Table 2.3. They were calculated based on the data underlying Figure 2.4. Following Khan et al. (2011), the degree centrality of a node is interpreted as the importance of a node. In terms of Khan et al.'s (2011) interpretation, nodes with a high degree centrality should be considered the sets of most important concepts. The sets of concepts 'environmental context' and 'organizational context' have the highest degree centrality. These are most important. However, degree centrality refers to the number of connections, not taking into account the direction of the connection. The data underlying Figure 2.4 is directional, so it is informative to look at the indegree and outdegree centralities. The relationships between sets of concepts are coded along the lines of their causal direction, providing meaning to the incoming connections (indegree centrality, indicating prominence in network analytical terms) and outgoing connections (outdegree centrality, indicating influence in network analytical terms). These two measures are particularly informative here, because sets of concepts with a high indegree centrality resemble the dependent variables or the aspect explained and the set of concepts with a high outdegree centrality resemble the independent variables or explanatory starting points. Hence, sets of concepts with a high indegree centrality are relatively often the part of the SDM process that is being predicted and explained by other sets of concepts. Sets of concepts with a high outdegree centrality are relatively often the part of the SDM process that is seen as a cause or predictor for other sets of concepts.

The scores for indegree centrality show that the sets of concepts 'implementation' and 'organizational performance' relatively have the most incoming connections. This means that these concepts are prominent. In the context of SDM literature, this means that these two sets of concepts are relatively often incorporated in synthesizing papers on SDM as the topic being treated or the phenomenon that needs to be explained. Sets of concepts that follow closely are 'organization context', 'formulation organizational level', 'content business level' and 'decision outcomes.' Organizational context may be somewhat of a surprise scoring high as it does, given the flow of the framework of Figure 1.4 in which context is the starting point. However, the original framework does not explicitly model a link among aspects of context, but other literature incorporated in the papers does. Furthermore, SDM studies often incorporate environmental dimensions, such as munificence and dynamism, which are affecting the

organization and thus organizational context. Next to that, the absence of feedback loops in the original framework suggests a static rather than dynamic integrative framework. Apparently, there are synthesizing papers that do include this.

The scores for outdegree centrality show that the sets of concepts 'environmental context' and 'organizational context' relatively have the most connections originating from them. This means that these concepts are influential. In the context of SDM literature, this means that these two sets of concepts are relatively often incorporated in synthesizing papers on SDM as the antecedent, cause or explanation for other sets of concepts. Sets of concepts that follow closely are 'top management characteristics' and 'nature of the strategic decision.' These are all context aspects and are expected given the flow direction of the original framework. Also not surprisingly, the formulation process on both the decision and organizational levels score substantially lower. The formulation process is one of the most emphasized areas of study as something that needs to be understood. Criticism is often provided that the consequences of the formulation process are poorly understood, especially because authors have questioned the explicit and recognizable structured nature of this part of the SDM process. This criticism varies from decision making as a formulation process being mere ceremonial rather than substantial or decisions are not arrived at through a formulation process, but are rather ex post rationalizations of past actions labeled as steps in the SDM process (cf. Cohen, March & Olsen, 1972; Chia 1994; Staw 1981; and Vidaillet, 2008).

Khan et al. (2011) discuss betweenness, closeness and eigenvector centrality next to degree centrality. Although the main idea of this section builds on their network of the core on a construct level, these centrality measures are not discussed here. The network of the core on a construct level as implemented in their paper consists of causal relationships that contain two constructs at most. SDM research, especially at the team level, works with mediating effect, which cannot be reconciled with simple dyadic causal relationships, if these are combined in sets of concepts as was done in this section. These other types of centrality primarily derive their meaning and implication from the indirect linkages, and thus would skew interpretation for the relationships between the sets of concepts to the degree that it would become increasingly difficult to interpret.

Table 2.3 Centrality measures for network of core sets of concepts

Node		Label	Degree centrality (%)	Indegree centrality (%)	Outdegree centrality (%)
CONTEXT	I	Environmental context	**10.87**	5.44	**16.30**
	II	Organizational context	**12.5**	7.61	**17.39**
	III	Nature of strategic decision	7.07	4.35	9.78
	IV	Top management characteristics	9.78	5.44	14.13
PROCESS	V	Formulation decision level	5.98	6.52	5.44
	VI	Formulation organizational level	6.52	7.61	5.44
	VII	Implementation	8.15	**9.78**	6.52
CONTENT	VIII	Corporate level	5.44	6.52	4.35
	IX	Business level	5.98	7.61	4.35
OUT-COMES	X	Decision outcomes	8.15	7.61	8.70
	XI	Organizational performance	9.24	**10.87**	7.61
← MODERATED RELATIONSHIPS	XII	Process formulation decision level --> Outcomes organizational performance	2.17	4.35	0
	XIII	Process formulation organizational level --> Outcomes organizational performance	2.17	4.35	0
	XIV	Process formulation decision level --> Outcomes decision outcomes	2.17	4.35	0

Node		Label	Degree centrality (%)	Indegree centrality (%)	Outdegree centrality (%)
	XV	Formulation organizational level --> Outcomes decision outcomes	2.17	4.35	0
	XVI	Outcomes decision outcomes --> Outcomes organizational performance	0.54	1.09	0
	XVII	Context top management characteristics --> Outcomes organizational performance	0.54	1.09	0
	XVIII	Process formulation decision level --> Implementation	0.54	1.09	0

The types of centrality that were calculated (degree, indegree and outdegree) agree to some extent with the pure visual interpretation made at the beginning of this section. Figure 2.4 suggests a major role for the sets of concepts captured for the sets of concepts captured under *context* and *process*. The centrality measures calculated (see Table 2.3) present a more nuanced and specific assessment of the interrelations of the sets of concepts. First, degree centrality indicated an important role for environmental and organizational context. Second, indegree centrality indicated a prominent role for organizational performance and implementation, Third, outdegree centrality indicated an influential role for environmental and organizational context. The important role of environmental and organizational context (degree centrality) is mostly a consequence of their influential role (outdegree centrality) if the scores in Table 2.3 are considered. The role of the influential sets of concepts captured under the environmental and organizational context are the primary antecedents for the prominent sets of concepts captured under the process part of implementation and organizational performance. The emphasis of the theoretical, conceptual and review literature thus points to explaining the implementation of SDM and

organizational performance from the environmental and organizational context. As this concerns the sets of concepts rather than specific constructs, it must be interpreted carefully. The sets of concepts that dominate the outdegree centrality list in the table are the sets captured under context. The sets of concepts that dominate the indegree centrality list in the table are not converging under one specific part of the integrative framework. Another conclusion is that although the sets of concepts captured under context are influential, there is no suspect for the prominent. These results show the importance of context in SDM as a starting point on how and why SDM processes are shaped and unfold, as well as the outcomes and performance ensuing from these.

2.3 Conclusion: State of the field

The construction of the citation network and the construction of the network of the core concept sets based on synthesizing journal publications delivered a view of the field in which it was clear what publications are core to the SDM field and which sets of constructs are important, influential and prominent.

The analysis of the citation network was conducted to obtain a view on the social organization and intellectual lineage in terms of citations of the SDM field. It delivered a group of core papers that can be divided in three sets. The core of the SDM field consists of synthesizing papers on (1) observational characteristics of decision makers, their cognitive biases and heuristics as well as cognitive processing, and interpretation of strategic issues; (2) integrative frameworks and their constituent building blocks; and (3) elements or overviews of ideal type actor and process models. These three sets of papers together indicate the intellectual community on which other synthesizing papers build or are built. The papers that are staples in the field thus focus on the most active and variable element in strategic decisions, the decision making actor and its characteristics; the placement of the decision making activity in integrating frameworks, relegating it to a certain area of inquiry; and on the positioning of the actor or process in terms of modeling, conceptualizing the basic relevant parameters of the actor and process by indicating the relevant conceptual amplitude, necessary to map the actor and unfolding process more realistically. In other words, this forms the background based on and against which SDM research in terms of synthesizing papers is shaped and extended. These sets thus show emphasis on the decision maker.

The analysis of the network of the core sets of concepts was conducted to determine the emphasis in the SDM field in terms of importance, influence and prominence. It revealed a primary focus of the effects of context on several aspects of strategic decisions as antecedents and primary focus on implementation and organizational performance as phenomena that are explained in the synthesizing literature. The two foci of antecedents (influence) and phenomena (prominence) cannot be said to be related directly, as in environmental context being the antecedent for the implementation phenomenon. This follows from the fact that the centrality measures are calculated based on the sets of concepts and the centrality of either focus is as much a consequence of being linked to the other focus as to other parts of the model (such as the formulation process on the decision level). It is striking, though, that the share of synthesizing papers suggesting moderating effects compared to direct and mediating effects is relatively low, given the node sizes of the moderation effects and the width of their links. This is accentuated by their absence at the top of Table 2.3 in terms of centrality measures.

The aim of this chapter was to develop an overview of the state of the field and determine to what extent the focus identified in the previous chapter is supported by the broader literature. Both network analyses in the first two sections of this chapter contributed to the identification of the state of the field and its emphasis. With regard to context, it is clear that top management characteristics are captured by the first set of synthesized papers identified in the citation analysis. These characteristics are central to the synthesizing literature. The focus on observational and cognitive characteristics, as well as the cognitive processing and strategic issue interpretation, confirms the relevance of the use of top management characteristics as an antecedent for the decision formulation, and how other aspects of context are influenced by these. The network of sets of core constructs analysis furthermore confirmed the centrality of all aspects of context as an antecedent, with most emphasis lying on organizational and environmental context. The context aspect that received the least emphasis in synthesizing papers was the nature of strategic decisions. The relative absence of moderating effects, in general, has been noted based on the network of sets of core construct analysis. More specifically, the relationship between decision formulation on a decision level and decision outcomes has not been conceptualized as contingent on moderating effects of context, whereas one would expect that. Both decision level formulation and decision outcomes lag

behind in several degree centrality scores with respect to their organization level equivalents in the framework by Papadakis et al. (2010), confirming the relative attention for outcomes that are debatable in judging strategic decisions (Baron and Hershey's outcome bias).

To sum up, the more integrative approach of this literature review concurs, by and large, with the research agendas that have been drawn up in previous stock-taking works, meaning that there is sufficient foundation to further pursue the direction identified. More specifically, analysis of the papers that were most central after the citation analysis indicates that there is little explicit mention and suggestion of how to include the interaction between the decision-making actor and other actors. Several papers referred to other actors that impact upon the decision-making process and the decision-making actor. However, most papers do not include the actor so it remains uncharted territory. Most prominently, the paper by Hart (1992) includes the role of organizational members besides the role of top managers. Other papers discuss social influence and how social cueing affects cognition (e.g. Narayanan et al., 2011). However, with explicit attention lacking, it appears that the inclusion of social networks is warranted to identify the actors impacting on strategic decisions.

Besides the absence of explicit attention to actors, attention is devoted to the scope of the influencing actors. This scope refers to other actors than the decision-making actor with an inward directedness. The use of outsiders, such as experts (Eisenhardt & Zbaracki, 1992), is sparingly mentioned, but not included in models other than being found in the political dimension of the formulation process.

In conclusion, it appears that the complimentarity between behavioral strategy and strategic cognition is relevant for this research. The above clearly suggests that the interpretation by the decision maker is an important staple of SDM research. It is present in both the results of the citation analysis, as well as the network of sets of core constructs analysis. The pattern of actions that managers undertake to cope with an uncertain and complex environment and an organizational context characterized by social and political forces did not come to the foreground through the citation analyses. This suggests that combining the integrative perspective together with the adaptive perspective makes sense. By combining the cognitive approach to SDM with the social network approach to SDM, the studies in this dissertation shed light on how the parts of the context that drive interpretation (and thus formulation) indirectly affect decision outcomes. Furthermore, the context factors of environment and organization are

denied their monolithic influence on formulation, and the relationship between formulation and decision outcomes, by overstepping the boundary between organization and environment in conceptualizing the social network that affects decision makers rather than unique and isolated organizational or environmental factors. Other context factors are included to indicate the conditions under which these effects become apparent. Individuals who have the internal and external information to make decisions gather in the decision nerve center to make decisions. Depending on the strategic issue at hand, different individuals will need or want to participate. This leads to the image that there are actors from inside or outside the organization (Collins & Clark, 2003; Saxton, 1995) that want to gain access to the decision nerve center to contribute to the assessment of the decision situation and decision. The ultimate decision makers will be influenced to some extent by these actors. Hence, decision makers will be able to draw different information through their social networks from different parts of their total network. Networks surrounding a decision maker are likely to vary from decision situation to decision situation, as suggested by Roberto (2003) in terms of top management team members, by Collins and Clark (2003) in terms of which internal and external connections will play a role, and by the changing composition of the dominant coalition (Child, 1972; Cyert & March, 1963). The lack of explicit attention to how and why other actors than key decision makers affect SDM is apparent. Implicitly, attention was directed at other actors that had organizational roles. Together with the lack of explicit attention to other actors, this indicates opportunities to include the social network approach to SDM.

In the next chapter, the influence of the social network on decision effectiveness through evaluative judgments is studied. The type of service organization used to test the moderating effect of firm specific characteristics. These characteristics may enhance or dampen effects of the intelligence and resources delivered by those parties from the social network of the decision maker for cognitive processing by the decision maker.

CHAPTER 3: SOCIAL CAPITAL AS A DECISION AID IN STRATEGIC DECISION MAKING IN SERVICE ORGANIZATIONS[3]

3.0 Introduction

Strategic decisions have been studied extensively in organizational and management research from several perspectives, such as that of the key decision maker (e.g. a CEO or small-business owner) or from the perspective of the top management team (Arendt et al., 2005). These decisions are complex, and are subject to the influence of multiple actors, both from inside and outside the organization (Hickson et al., 1986; McKenzie, Woolf, Winkelen, & Morgan, 2009). Although previous research has explored this influence to some extent, this chapter examines the effects of these actors on the key decision maker in small and medium sized enterprises (SMEs, here <100 employees) that deliver services to intermediate and final users, both organizations and consumers. The actors function as a decision aid to the key decision maker, whose job it is to arrive at a decision that is effective, rather than ineffective, for the organization.

Actors other than the key decision maker who play a role in strategic decision making (SDM) have been captured under various headings. Research on managerial elites (Pettigrew, 1992), top management teams (Kauer, Prinzessin zu Waldeck, & Schäffer, 2007), participatory decision making (Carmeli, Sheaffer, & Halevi, 2009), advice networks (McDonald & Westphal, 2003), informal decision networks (Cross, Thomas, & Light, 2009), upper echelons (Hambrick, 2007), decision making groups (Eden & Ackermann, 2010), and the external ties of boards (Carpenter & Westphal, 2001), as well as top executives (Geletkanycz & Hambrick, 1997) has focused and covered this variety of roles. These studies have enriched the understanding and explanation of SDM that comes from including both characteristics and relational aspects of the decision situation. Furthermore, the involvement of these actors affects decision outcomes, such as quality, effectiveness, and accuracy. These decision outcomes, in turn, correlate with organizational outcomes in terms of economic performance and other outcomes (Vidaillet, 2008). These studies focus mostly on large organizations in

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manufacturing (Papadakis et al., 2010) and include one specific type of actor rather than a variety of actors.

These previous studies show that decision makers do not operate in a vacuum. Further enrichment occurred through including group dynamics and group processes, such as cognitive and affective conflict (Amason, 1996), behavioral integration (Carmeli, 2008; Simsek, Veiga, Lubatkin, & Dino, 2005), trust dynamics (Parayitam & Dooley, 2007), and dysfunctional effects of past performance (Amason & Mooney, 2008). These studies reveal that strategic decision processes are affected by the interactions in these somewhat loosely coupled groups, which demonstrates the need to incorporate the social context of key decision makers if the reason why they take the decisions they do is to be understood.

This social context is accommodated by including various types of actors that can be part of such a group. This is done by studying the structural social capital of service SMEs. The structural dimension of social capital focuses on the structural position of actors in a group of actors that are connected, whereas the other two dimensions of social capital focus on the assets created and leveraged through relationships (relational social capital), and the resources providing shared representations, interpretations, and systems of meaning among parties (cognitive social capital) (Nahapiet & Ghoshal, 1998). To develop a better understanding of the decision situation, key decision makers gather most of their information through social sources in their direct environment. The implication for the key decision maker is that their understanding of the decision situation depends, to a large extent, on who they are connected to, and interact with, during the SDM process (Lang, Calantone, & Gudmundson, 1997). This is especially true for SMEs, because of the limited resources and size of their strategic planning staff compared to large organizations (Liberman-Yaconi, Hooper, & Hutchings, 2010). Hence, it is posited that the effectiveness of a strategic decision is dependent on these information inputs, which come through the structural social capital of the key decision maker.

According to Papadakis et al. (2010), the main stock of knowledge on SDM is based on manufacturing organizations, whereas over 60 per cent of economic activity in countries that are part of the Organization for Economic Co-operation and Development is generated by service organizations (Carmeli, 2008). This percentage of economic activity generated by service organizations as compared to manufacturing organizations is increasing rather than decreasing. Based on

their review of the recent literature, Papadakis et al. (2010) labeled research on SDM by service organizations one of the substantive priorities, because service organizations are not necessarily subject to processes and factors the same way as manufacturing organizations. This has to do with the relatively strong dependence on people's know-how in the design and delivery of services compared to manufacturing organizations (Segal-Horn, 2006; Teece, 1998).

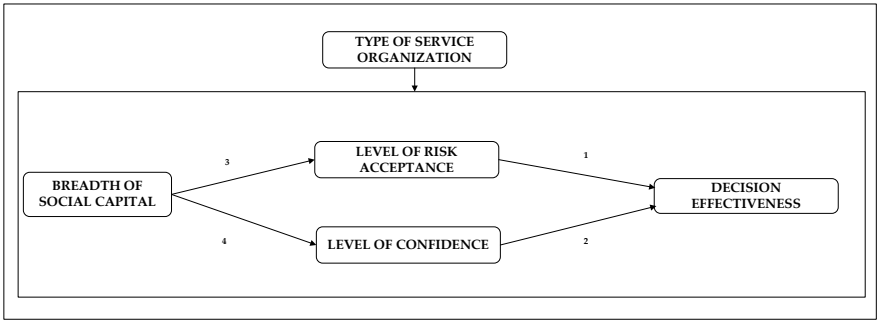
This chapter is fueled by the twofold challenge of including a variety of actor types and filling the gap of knowledge on SDM in service organizations. The aim is to contribute to the literature in three ways. First, the literature on SDM in service organizations is contributed to by focusing on the role of structural social capital as a decision aid. The focus is on the variety of actors that impact on decisions across different service sectors because of their involvement in the decision process. Aided by these relations and the information coming through them, decision makers in service organizations will enhance their understanding of the decision situation in terms of accuracy. This allows us to determine the extent to which decision makers come to understand a decision situation and how that affects the effectiveness of strategic decisions. Furthermore, the social structural capital facilitates the interaction between key decision makers and the actors to which they are tied. These ties are the antecedents for a joint understanding of the decision situation, which relates to another dimension of social capital, namely the cognitive dimension. Previous research has suggested that structural social capital paves the way for cognitive social capital (see Anderson & Jack, 2002), which refers to those resources providing shared representations, interpretations, and systems of meaning among parties (Nahapiet & Ghoshal, 1998). Second, the literature is contributed to by testing the mediation effect of evaluative judgments in the relationship between structural social capital and decision effectiveness. The fact that actors influence a decision does not produce either effective or ineffective decisions. Rather, it is demonstrated whether the effect of structural social capital as a decision aid varies as a consequence of the interpretation by the key decision maker. Involvement of certain or multiple actors, expectedly, has different effects for the different service sectors, which are caused by the interpretation of the decision maker. This informs us on the role of social context for different sectors and organizations in them. Third, by incorporating concepts from both the fields of SDM research and

service organization research, the aim is to advance the understanding of the service industries, promoting multidisciplinary research as suggested by Chesbrough and Spohrer (2006).

3.1 Theoretical background

In order to test the effects of structural social capital as a decision aid to achieve effective decisions, the framework from Figure 3.1 is used and tested for different service sectors. Social capital is a multidimensional construct. As stated above, it consists of cognitive, relational, and structural dimensions. The structural dimension of social capital focuses on the structural position of actors in a group of actors that are connected (Nahapiet & Ghoshal, 1998) and is an important antecedent of decision outcomes. By being connected to other actors, key decision makers in service SMEs are influenced by the diverse pools of knowledge that flow from these ties (Stam & Elfring, 2008).

Figure 3.1 Specified conceptual model



The success of a strategic decision is often conceptualized and measured in economic terms, such as cash flow or returns to focal organizations (Arend, 2009). This conceptualization is limited for a number of reasons. First, it attributes economic performance to a strategic decision, which does not necessarily have an effect on performance directly. As Dean and Sharfman (1996) state, a wide array of factors affects performance, whereas performance also can be an antecedent of strategic decision processes. Second, strategic decisions are not only about topics that affect economic performance directly. They may concern a wide variety of topics (Hickson et al., 1986), such as sustainability programs and the callbacks of

products for reputation reasons. These do not directly affect economic performance but do sustain the functioning of organizations in its social, market and institutional environment by adhering to the demands beyond economic functions. These are likely to affect performance, but in an unclear way. Third, not all service organizations, and especially SMEs, have organizational performance in economic terms as their main goal. The success of a strategic decision cannot be equated to economic performance. This is most obvious for public service firms (Segal-Horn, 2006) and nonprofit service firms (Cook & Brown, 1991). This also is true for service organizations that operate within the context of a larger firm, yet are a distinctive entity, such as an organization housing externalized research and development projects (Chiesa, Manzini, & Pizzurno, 2004; Davis, 1991).

Therefore, decision effectiveness is used. Decision effectiveness is "the extent to which a decision achieves the objectives established by management at the time it is made" (Dean & Sharfman, 1996, p. 372). Harrison and Pelletier (1998) state that strategic decisions are made by key decision makers and commit organizational resources, time and energy of upper and lower tiers to certain courses of action. These decisions are prompted by a variety of factors, such as stakeholders, internal developments and environmental developments. Which decision is deemed appropriate is determined by the degree of desirable (in)congruence of the organization with its environment or other relevant yardsticks. Hence, the interpretation of these developments by decision makers is of utmost importance to maintain a steady course for profitability or survival of the organization. Decision effectiveness is thus context and process specific (Elbanna & Child, 2007a).

In order to achieve the objectives of management at the time of decision, decision makers draw on the variety of internal and external ties to inform their judgment. Compared to multinational service firms, service SMEs' economic and technical resources are limited (Liberman-Yaconi et al., 2010) and their smaller size implies they cannot afford strategic planning support to the same extent (Brouthers, Andriessen, & Nicolaes, 1998). These differences pose limitations on the decision effectiveness of service SMEs if they solely rely on the internal ties (Brouthers et al., 1998). Decision makers in service SMEs are likely to rely substantially more on external ties, rather than ties embedded in the focal organization structure to reduce the input uncertainty and to mobilize shared resources (Knights & Morgan, 1995).

Together, these internal and external ties constitute a decision aid to the decision maker, implying that the access to other actors through structural social capital increases the availability of relevant information, leading to a more informed judgment on the decision situation (corresponding to lines 3 and 4 in Figure 3.1). Decisions will be enhanced, and decision effectiveness will be positively affected (Harrison & Pelletier, 2000), when the information which is provided through these ties is interpreted correctly and drives decision makers to more accurately assess the decision situation.

3.1.1 Evaluative judgments

Above, it was outlined that structural social capital contributes on the input side of evaluative judgments of the decision situation. Inputs stemming from social capital can have psychological effects on managers, leaving them better equipped to act decisively in the decision situation (Eisenhardt, 1989). Small organizations tend to base their information gathering and interpretation on their proximate environment to assess (decision) situations (Lang et al., 1997). The mental representation built through these inputs provides the basis for judging and subsequent effective decision making (corresponding to lines 1 and 2 in Figure 3.1) (Hastie, 2001). The subsequent assessment of the decision situation encompasses the input uncertainty and the mobilized shared resources that become available through the structural social capital. On the one hand, this implies that the confidence of the decision maker in the decision that is taken increases, that it is correct given the available information (Lee & Dry, 2006). Information processing is central for deciding and building confidence for the decision, because it provides the decision maker an informed basis for taking decisions (Hastie, 2001). On the other hand, this comfort translated in confidence does not leave the decision without risk in terms of attaining goals. The decision maker has gained a degree of confidence that sufficient insight in, and understanding, of the decision situation is gained to take a decision and predict its consequences. This does not imply that it will materialize and automatically achieve the goals of management. So, next to the evaluative judgment of the confidence level, the level of risk becomes relevant. Level of risk as an evaluative judgment refers to the degree that the risk, as assessed by the decision maker inherent in the decision situation, is acceptable. Decision makers who are comfortable taking their decision based on their social resources and who accept

the risk level inherent in a decision situation expect to attain higher levels of decision effectiveness. They rely on their skills to navigate through the steps that entail risks, because they believe they know what is coming their way and how to handle it. They expect to achieve the objectives for which the decision is taken. The higher the confidence level and level of risk acceptance, the higher the decision effectiveness will be. The general hypothesis, therefore, is that evaluative judgments mediate the relationship between structural social capital and decision effectiveness. In other words, information processing by the key decision maker, as supported by his/her social structural capital, affects the degree to which the strategic decision is in line the objectives laid out for the service SME at the time the decision is made.

Structural social capital here refers to the breadth of social capital, which is the number of sources or channels that the decision maker relies on (Laursen & Salter, 2006), being the variety of actors that are active to provide information to inform the evaluative judgement (Borgatti, Jones, & Everett, 1998; Harrison & Klein, 2007). In general, higher breadth of social capital leads to more diverse knowledge about the decision situation. In terms of evaluative judgments of the decision situation, this leads us to conclude that the higher the breadth social capital, the more accurate the judgment, increasing the chances for higher levels of decision effectiveness.

The final aim of this chapter is to explore effects of the different service sectors in the way structural social capital aids to achieve decision effectiveness through evaluative judgments. Sector has been found to affect the relationship between resources and outcomes (Oerlemans, Meeus, & Boekema, 1998), and which actors are involved in SDM (Hickson et al., 1986). Depending on the sector, actors become involved in SDM processes, but do not necessarily affect the outcome of that process (Hickson et al., 1986). Although sector has received attention in the SDM literature, it has not been addressed for different service sectors. If sector affects who will be involved, what will be decided on, and how the process will unfold (Hickson et al., 1986), the effects of structural social capital can be expected to vary for different sectors. This will be visible in the effects of the structural social capital on decision effectiveness through evaluative judgments. The involvement of a variety of actors between sectors affects which information is available to decision makers and their information processing, leading to different effects on decision effectiveness.

Classifications of service sectors as presented by the World Trade Organization (Segal-Horn, 2006) chambers of commerce, or supranational organizations, such as the European Union (Illeris, 2007) are diverse. They are based on most important product, user sectors (e.g. household services) and ownership (private versus public services) to name a few. Relative to the interest in understanding decision effectiveness for different service sectors, the focus is on two aspects that play an important role in the design and delivery of services. These are essential for any service strategy that is decided on. The two aspects differ for service sectors and capture traditional characteristics such as perishability, heterogeneity, intangibility and the simultaneous production and consumption of services. The first aspect concerns to whom the service is delivered to, whether they carry more of an intermediate services character or are delivered to the final user. The second aspect concerns the reliance on know-how in shaping and producing services, whether the knowledge assets in delivering the service are vital to the quality of the produced service, or whether little depends on them. Therefore, service sectors are distinguished based on their service delivery (Bryson & Daniels, 2007) and their dependence on knowledge-based resources (Segal-Horn, 2006; Teece, 1998).

When the service is delivered to the final user and depends highly on the knowledge assets of the frontline employees delivering the service, the degree of control for decision makers is low, as these services are likely to be highly customized. Thus, additional information and analyses through the decision support of a higher variety of actors to which the decision maker is tied do not necessarily warrant an enhanced decision. The degree of control is higher when the service is intended as an input for another process. Intermediate services are likely to require some standardization that does not strongly vary from delivery to delivery, leading to higher degrees of standardization if the knowledge-based resources are relatively unimportant. When knowledge-based resources do matter greatly, intermediate services are likely to be more customized, but not as much as producer services. Thus, additional information and analyses through the decision support of a higher variety of actors to which the decision maker is connected is likely to lead to an enhanced decision. Knowledge assets, specifically, play a role if the delivery of the service depends strongly on the knowledge assets that reside with the individual who is delivering it.

3.2 Methods

This study uses survey data collected by the Dutch research institute EIM Business and Policy Research. Commissioned by the Dutch Ministry of Economic Affairs, this survey aimed to explore how decisions in SMEs are made. It focuses on small business owners who made at least one important decision in the past three years. Data were collected by Computer-Assisted Telephone Interviewing. The 1203 respondents were stratification sampled across eight industries, namely manufacturing, construction, retailing, hospitality, logistics and transport, personal services, financial services, and business services (the latter two were combined into commercial services). The number of organizations initially drawn from each industry was roughly equal, and no organization was to have more than 100 employees. Of these, 700 indicated to have made an important decision in the previous three years. This dataset includes 434 service SMEs that qualified for the current research based on the notion that the decision was of a strategic nature and they were a service firm (out of these 700 firms). Additionally, the number of important decisions taken by these service SMEs in the past three years, as reported by the respondent, was not tolerated to be higher than 10 and the investment amount needed to be substantial. The respondents that met these criteria in the dataset represent retailing (16%), hospitality (17%), transportation and logistics (14%), financial services (20%), personal services (16%), and commercial services (17%). The analysis covered descriptive and bivariate statistics (Pearson correlation) in order to explore the data. Subsequent analysis with AMOS structural equation modeling with maximum likelihood procedure was used to test the framework.

3.2.1 Measures

Decision effectiveness, the dependent variable, was measured by four items on three point Likert scales (Cronbach's α=0.671). The scales range from 1 to 3 and included the extent the strategic decision had contributed to turnover growth, profit growth, to what extent the decision maker was satisfied with the decision, and to what extent the decision had led to the expected result (see Walker & Brown, 2004). Decision effectiveness is calculated as the unweighted sum of these items, ranging from 0 to 12.

Breadth of social capital, the independent variable, was measured by counting the number of categories of actors indicated by the respondent as having

influenced the decision (ranging from 1 to 5, where a score of 1 indicates one actor category influencing the decision, and a score of 2 indicates two actor categories influencing the decision, etc.). The parties that could be selected by the respondents were employees, family, advisors, relations with other businesses inside the sector, and relations with other businesses outside the sector. A sum score was calculated to indicate the breadth of social capital, representing the variety of actors acting as the decision aid. The respondents could not specify the number of actors that influenced the decision within a given category.

For the mediating variables, being *level of risk acceptance* and *confidence level*, one item per variable with four-point Likert scales was used. The scales range from 1 to 4 and included the estimate of size of the risk, ranging from low level of risk to high level of risk, and the extent to which the respondent was convinced of the decision, ranging from high doubt to strong conviction.

3.3 Results

The results from the descriptive and bivariate statistics are displayed in Tables 3.1 and 3.2. Table 3.1 contains information on the sample. Males outnumber females by far, the mean age was 45 years, the mean size is 37 employees, and the amount of money that was invested for the decision varies quite strongly, the mean being € 921,300.

Table 3.1 Respondent, decision and SME characteristics

Characteristics	Frequency	Mean	SD
Gender			
Male	391		
Female	43		
Age	434	44.97	9.02
Number of employees	434	37.05	61.02
Investment amount of decision under analysis (* € 1,000)	434	921.3	4609.70
Number of important decisions taken in past 3 years	434	2.80	2.20

N=434

In Table 3.2, significant correlations of the independent variable breadth of social capital (0.108, $p<0.05$) with the level of risk acceptance and with confidence level (0.114, $p<0.05$) are reported. Confidence level in turn correlates with decision

Table 3.2 Means, standard deviations and correlations

	Mean	SD	1	2	3	4
1. Breadth of social capital	1.50	1.20	1			
2. Level of risk acceptance	2.31	0.88	.108*	1		
3. Confidence level	3.52	0.65	.114*	-.113*	1	
4. Decision effectiveness	5.27	2.39	-.056	.002	.159**	1

*N=434, ** p<.01, * p<.05*

effectiveness (0.159, p<0.01), whereas level of risk acceptance does not. Confidence level and level of risk acceptance correlate negatively with one another (-0.113, p<0.05).

3.3.1 Structural equation analysis

The relationships between the variables were tested via AMOS structural equation modeling software version 6, using a maximum likelihood procedure. The path analysis results are presented in Table 3.3. The three models contain approximately the same number of respondents and correspond to the service sector classification of Browning and Singelmann (Illeris, 2007). Producer services (I) covers retailing and commercial services (33%), distributive services (II) covers transportation and logistics and financial services (34%), and consumer services (III) covers hospitality and personal services (33%) from the sample. The fourth sector of Browning and Singelmann covers social services, which is not represented in this sample.

Two aspects were introduced that are expected to underlie the effects of structural social capital in service strategy decisions, namely the mode of service delivery (final user or intermediate user) and the dependence on knowledge-based resources in producing the service (with low dependence, standardization is expected to be higher than with high dependence, which leads to more customization). The sectors 'producer services' and 'consumer services' are characterized by service delivery to a final user, whereas 'distributive services' is characterized by service delivery to an intermediate user. The sectors 'distributive services' and 'consumer services' are characterized by a low to medium

dependence on knowledge-based resources in producing the service. The 'producer services' sector is characterized by medium to high dependence on knowledge-based resources in producing the service. Two categories of fit indices were used in the analysis: absolute and incremental. See Table 3.3 for the numbers, and Browne and Cudeck (1993), and Widaman and Thompson (2003) for a discussion on the threshold values of the different fit indices. The numbers on the lines in the first column correspond to the numbers alongside the arrows in Figure 3.1.The fit indices for the 'consumer services' model (right column in Table 3.3) show that the model is significantly different from the data as far as incremental fit indices are concerned, and it can be improved significantly (the NFI and TLI are close to but below the threshold level, and the CFI is not computed). In the two other models, the absolute and relative fit indices show that the models are not different from the data and cannot be significantly improved. The specified models for the three service sectors inform us on the differences between them for the effect of breadth of social capital on decision effectiveness through the mediation of risk level acceptance and confidence level. The effect is visible, as path coefficients differ, but due to the fit indices for 'consumer services' falling below threshold values, this comparison needs to be made with caution. The comparison between producer and distributive services holds more ground because of the fit indices exceeding the threshold values.

The mediation by the evaluative judgments between breadth of social capital and decision effectiveness produces mixed results. Breadth of social capital leads to higher levels of risk acceptance, but that does not lead to higher decision effectiveness in all sectors. Breadth of social capital leads to lower confidence levels and lower decision effectiveness. This means that strategic decisions, in terms of decision effectiveness, are affected differently by breadth of social capital. The results show that when strategic decisions are taken in service sectors that are characterized by a medium to high dependence on knowledge-based resources for the production of the service and mode of service delivery is to the final user, here the 'producer services', the decision support of a higher variety of actors does not help the accurate assessment of the decision situation to achieve higher decision effectiveness. In the coefficients of model I in Table 3.3, the effects on decision effectiveness are negative, meaning that a higher variety of actors in the decision aid produces negative effects rather than positive ones. In terms of

Table 3.3 Results of structural equation modeling analysis

	Predictor	Outcome	Model I Producer services	Model II Distributive services	Model III Consumer services
1	Level of risk acceptance	Decision effectiveness	-0.11	0.27***	-0.09
2	Confidence level	Decision effectiveness	0.22**	0.20**	0.08
3	Breadth of social capital	Level of risk acceptance	0.13	0.14†	0.04
4	Breadth of social capital	Confidence level	-0.22**	-0.01	-0.12*
	Fit statistics [a]				
	Chi-square		0.069	0.140	0.989
	Degrees of freedom		1, (P=0.793)	1, (P=0.708)	1, (P=0.320)
	RMSEA		0.0001	0.0001	0.0001
	NFI		0.996	0.993	0.894
	CFI		1.000	1.000	-
	TLI [b]		1.000	1.000	0.832

N=434, (Model I =141, Model II = 149, Model III = 144)
Standardized coefficients reported here († p<.10, * p<.05, ** p<.01, *** p<.001)

[a] *Threshold values reported between brackets after the explanation of the abbreviation. RMSEA: root mean square error of approximation (0.08), NFI: normed fit index (0.90), CFI: comparative fit index (0.90), TLI: Tucker-Lewis index 0(.90).*
[b] *The TLI scored above 1.0 for the 'producer services' model (2.078) and the 'distributive services' model (1.870), which are rounded to 1.000. The deviating values are the consequence in the correction procedures employed by AMOS for this index.'*

decision effectiveness for 'producer services', this means that decision support by a higher variety of actors does not help to obtain an accurate assessment of the decision situation, and that the decision taken does not achieve the objectives established by management at the time it is made. For 'distributive services', the coefficients of model II in Table 3.3 indicate that decision support partially helps in getting a more accurate assessment of the decision situation, leading to improved decision effectiveness. This means that for 'distributive services', the decision partially achieves the objectives established by management at the time it is made. As model III ('customer services') does not meet the demands for the fit indices, the model is not used in the comparison. In summary, the expectation

that structural social capital provides the decision support for a more accurate assessment of the decision situation and thus benefits the achievement of objectives at the time of decision is not confirmed. Rather, the evidence and results are mixed.

3.4 Discussion

In this study the focus is on the role of structural social capital as a decision aid in forming an assessment of the decision situation and how that relates to decision effectiveness. By focusing on the role of evaluative judgments, it was found that the role of mental representations in strategic decision processes of service SMEs affects decision effectiveness differently for different sectors, but does not systematically enhance decisions across different service sectors.

At the outset of this study, the aim was to contribute to the literature in three ways. First, the effects of a higher variety of actors influencing the interpretation of the decision situation needed to be examined. Decision support by a higher variety of actors impacts mostly negative in the service sectors included in this study. With the partial exception of the 'distributive services' sector, decisions rather suffered than benefited from it. Although breadth of social capital boosts the levels of risk acceptance, it undermines confidence. If the degree of control is lower (producer services), this is even more detrimental to decision effectiveness than if the degree of control is higher (distributive services). It stands to reason that the decision support coming through the structural social capital contains a variety of influences, some benefiting and others hampering the assessment of the decision situation. If decision makers do not succeed at differentiating and integrating the relevant elements of the mental representation of the decision situation, the decision outcomes are likely to suffer. This possible imbalance in the decision situation suggests that service SMEs require more processing power for their strategic decisions. This could be done by deliberately employing non-conventional thinking approaches in SDM (McKenzie et al., 2009), or decreasing the dependence on the individual (West, 2007). In the conceptualization here, the structural social capital affected the key decision maker but did not prove sufficient to arrive at an accurate assessment of the decision situation. It did not lead to the emergence of high levels of cognitive social capital. This suggests that mental representations on a collective level, such as collective cognition (West, 2007) or group cognitive complexity (Curşeu, Schruijer, & Boroş, 2007) may

provide a better explanation in not too loosely coupled groups. In service SMEs, the lack of resources to gather and analyze information suggests that building a more tightly coupled group that acts as a decision aid and processing unit seems the most feasible way to enhance decisions. As a consequence, future research should include relational aspects on the relation between the key decision makers and the actors that make up the decision aid, such as tie strength, trust, expertise or group processes (Olson, Parayitam, & Bao, 2007b).

Second, the aim was to find out whether differences could be identified regarding the social context. No significant differences were found, as for most cases employees and advisors were part of the decision aid. This means that little variety exists among the types of parties that influence strategic decisions across service SMEs, if the variety of actors that the key decision maker is tied to is taken. Given the mainly negative effects caused by this (limited) variety, this stresses the need for a healthy dose of diversity in SDM (Olson et al., 2007b). The influence of employees and advisors is logical, as they are knowledgeable in specific, and general terms and thus primary, trustworthy and proximate sources of information for key decision makers. Knowledge about the organization, its services, and its environment is considered vital in many approaches to strategizing. Information coming from these insiders, on the one hand, will give the impression that the knowledge covers the required ins and outs of what occurs in the organization, but it may also fail to provide a comprehensive analysis. So, on the other hand, the proximity of these actor types may lead to a false sense of decision accuracy, because these insiders provide a less than complete exploration and analysis of the number of, and links between, relevant elements of the decision situation (see Forbes, 2005a). By increasing the diversity and combining it with more tightly coupled groups to support decisions, service SMEs can enhance their decisions by compensating for not only the sheer lack of (informational) resources, but also for the quality needed to arrive at accurate assessments of the decision situation (Lee & Dry, 2006).

Third, the aim was to extend the understanding of SDM in service SMEs. It was proposed that the more standardization, the easier it is to arrive at an accurate assessment and decision effectiveness with the aid of social structural capital. However, the results here suggest that this link is weak, as the effects are mostly negative. On the one hand, this may have to do with the distribution of service organizations in the sample that are more located at the customization end of the spectrum rather than the standardization end, due to high knowledge

dependencies. On the other hand, this could simply be similar to findings from other studies that it is not always the higher variety of actors contributing, the higher the positive outcome. Rather, there is a turning point with increasing width or numbers, resulting in the opposite effect if it keeps increasing (e.g. u-shaped relations). It can also simply be the case that the structural social capital is a negative influence rather than a positive one (Bratkovic, Antoncic, & Ruzzier, 2009; Warren, 2008). This suggests examining the effects of structural social capital that displays a larger spread in terms of width or numbers of influence on strategic decisions further.

This study is limited in two ways. First, this study does not control for prior relationships between the decision makers of the service SMEs and the variety of actors that have influenced previous strategic decisions. Characteristics of ties between actors play a role as these will enhance the co-production of (new) services. Breadth of social capital does not correct for characteristics of ties such as tie history and tie strength (see Geletkanycz & Hambrick, 1997) that can play a role in how, evaluative judgments are shaped and why effects materialize. The presence of resources and influence do not inform us on what is done with it, why it was used and in this case how the influence specifically affected the decision. This is relevant to find out because influences reinforce, extend or contradict the initial assessment of the key decision maker and affect the mental representation of the decision situation.

Second, the limited conceptualization of social capital presents the danger that the research did not fully capture the relevant effects, which can lead to under or overestimation of the effects found. Social capital as defined in the literature encompasses the actors as well as the resources that become accessible through the relations with these actors (the other dimensions, cognitive and relational social capital are not explicitly included in the research). This research did not identify the resources that became available. This limits the current research, because the importance of shared resources for SDM in SMEs in general and service delivery, in particular, has been demonstrated in previous research (Carmeli, 2008; Lang et al., 1997). Furthermore, the respondents could not indicate that customers had an influence on the strategic decision. This is a consequence of the design of the questionnaire. Arguably, given the fact that customers co-produce the service, user panels may play a role in taking strategic decisions. By not explicitly incorporating this type of actor as a possible influence on the strategic decision, the effect of breadth of capital may turn out more unequivocal.

The results of this study inform managers on two important issues that are somewhat related. First, the results point to the importance of being aware of who influences key decision makers in SDM. This means that it is important for decision makers to be aware of who they are talking to. So, following the message of Cross et al. (2009), who you know affects what you decide, it may be better sometimes to actively seek other people than the logical messengers. It may prevent one from getting stuck thinking in a box that is too small to deal with the current situation. Employees and advisors are the most often consulted parties in SDM, yet they do not systematically yield positive effects for accurately assessing a decision situation. This does not suggest that decision makers should stay away from the influence of employees and advisors or refrain from seeking their input. Their knowledge (about the specific organization, its services and its clients and their general knowledge about the type of organization and its comparable counterparts in the competitive environment) is a vital input for assessing the decision situation from the organization's perspective. The main point is that it is not always enough to limit explorations and analyses to the employees and the (hired) advisors that make managers feel comfortable in their organization's skin. Questions on how well their knowledge and experience matches the strategic issue they are dealing with should always be raised, and seeking others' advice may be necessary if one feels it is insufficient or simply outdated.

This may lead to suggesting that (regional) networking events for service SMEs are important to visit, but probably one size does not fit all. Although valuable input can be derived from these events (such as getting to know about developments that provide opportunities for collaboration, innovation or market access somewhere down the line), these events occur with relatively distant people in one's business or not even in one's business. However, actually discussing core moves one intends to make is unlikely to take place because of the mixed and competitive interests between organizations.

The second important issue is that the results point to the importance of the mode of service delivery and their dependency on knowledge. Next to the social context and process of decision making, the characteristics of the service SME and, more specifically, its services should be weighed in. Although the characteristics of services were not study in detail, if was found that service SMEs that are in sectors that deliver to intermediate users are more likely to benefit from an elaborate decision aid than service SMEs that deliver to final users (consumers as well as business-to-business). The reason for this is that service

delivery to intermediate users requires more standardization than for delivery to final users. These organizations need to be more in line with expectations of their (social) environment to be considered eligible as a transacting party. For managers, this implies that they benefit from 'sending out feelers' and invest in information search to anticipate the upcoming innovations and developments. For example, clients and government bodies have certain (quality) expectations of the transportation of food (think about the ISO 9001 quality standards that provide instant recognition of a quality certified organization). However, these are not fixed indefinitely. Because of this, it is important for managers to rely on the knowledgeable people in their organization and the advisors that know the business to be able to make decisions that match the internal competencies and capabilities with the demands from the environment. Service SMEs that deliver to final users benefit less substantially from an elaborate decision aid. The customization that is required in their service delivery cannot be strategized for fully and needs more degrees of freedom when the service SME engages its environment.

3.5 Conclusion

The moderating effect of service sector is clearly visible in SDM in service SMEs. The effects of the variety of social ties on information processing, and ultimately on the effectiveness of strategic decisions, differs for the sectors studied. The effects of structural social capital were found to be equivocal. The service delivery and their dependency on knowledge lead to differences between sectors regarding decision effectiveness. The main reason for this can be found in the way information processing differs between decision makers in service SMEs in different sectors.

In Chapter 4, the effects on decision effectiveness are more elaborately researched. Besides breadth of social capital, human capital in terms of education and experience are included as antecedents of decision effectiveness through evaluative judgments. The effects are researched for moderation by different decision topics.

CHAPTER 4: INFORMATION PROCESSING AND STRATEGIC DECISION MAKING IN SMALL AND MEDIUM-SIZED ENTERPRISES: THE ROLE OF HUMAN AND SOCIAL CAPITAL IN ATTAINING DECISION EFFECTIVENESS[4]

4.0 Introduction

Strategic decision making (SDM) within smaller firms often resides with a single individual or a small group of people. This clearly differs from the situation in large firms, where the senior management team and strategic planning staff undertake key decisions (Brouthers et al., 1998), and where decision tools support this process (Goodwin & Wright, 2001; Leidner & Elam, 1995). SDM in small and medium sized enterprises (SMEs) takes place under bounded conditions in terms of limited processing capability (Simon, 1997) and intelligence gathered (Nutt, 2007), often leading to lower decision comprehensiveness (Smith, Gannon, Grimm, & Mitchell, 1988). These preconditions place the individual decision maker at the very core of the process and make individual factors related to information processing highly relevant for decision effectiveness. Decision effectiveness is "the extent to which a decision achieves the objectives established by management at the time it is made" (Dean & Sharfman, 1996, p. 372). By placing the individual decision maker at the centre of the strategic decision process, this chapter looks at the mechanisms that link the human and social capital of the decision maker to decision effectiveness, thereby providing insight into the micro complexities of business interaction in the context of small business development.

Previous research has found that micro foundations and micro complexities largely determine strategic choice (Gavetti, Levinthal, & Rivkin, 2005). For

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example, the consequences of the person making the decision (managers in large firms or entrepreneurs) (Busenitz & Barney, 1997), which decision procedures are maintained (Hickson et al., 1986), and which inputs and outcomes regarding the decision-making process are at play (Liberman-Yaconi et al., 2010) across different decision contexts (Elbanna & Child, 2007a; Iederan, Curşeu, & Vermeulen, 2009), are determined by the specifics that play out at the micro level through the interaction of decision specific, environmental and firm characteristics (Elbanna & Child, 2007b). The differences in resource availability between small and large firms affect the comprehensiveness and centralization of the SDM process (Liberman-Yaconi et al., 2010), decreasing the likelihood that the processes in SMEs firms will be scaled-down versions of the processes in large firms.

A growing body of literature explores the role of human and social capital in entrepreneurial SDM. Levels of expertise and education are factors closely connected to the volume of information engaged in the decision process, and thus, are relevant inputs for the strategic decision process (Hitt & Tyler, 1991; Papadakis et al., 1998). The social ties of executives and senior management teams in large organizations (Geletkanycz & Hambrick, 1997) and in entrepreneurial venture creation (Batjargal & Liu, 2004; Lee & Jones, 2008; Zhang, 2010) have been analyzed in strategic decision processes, and were found to have a profound influence on performance (Stam & Elfring, 2008), information search (Nebus, 2006), networking activity (Sawyerr, McGee, & Peterson, 2003), self-efficacy (Forbes, 2005b), and market access (Mesquita & Lazzarini, 2008). This means that human capital and social capital are relevant inputs for strategic decision processes in small firms.

The aim of the chapter is to test the mediating effect of evaluative judgments in the relationship between the human and social capital of the entrepreneur, on the one hand, and decision effectiveness, on the other. Evaluative judgments are forms of information processing central to the decision-making process. Decisions are based on the mental representations developed as a consequence of these evaluative judgments (Balogun, Pye, & Hodgkinson, 2008; Hastie, 2001). Thus, the decision situation is reflected by evaluative judgments (the representation of the decision situation for the decision maker). This chapter focuses on the role that two such evaluative judgments play – namely, level of risk acceptance and confidence level – in explaining the effect of human and social capital on decision effectiveness.

The contribution of this chapter is twofold. First, it contributes to the social capital literature by testing the effect of social ties on evaluative judgments, which in turn impact on strategic decision effectiveness. By building on the information processing perspective, this research contributes to the understanding of the relationship between the structural and cognitive aspects of social capital. Research in the area has identified the importance of social ties in venture creation and enterprise gestation (De Carolis, Litzky, & Eddleston, 2009; De Carolis & Saparito, 2006; Lee, 2009), but the effects of social capital (Blackburn & Kovalainen, 2009) and specifically, cognitive social capital (Lee, 2009) on strategic decisions in small businesses are not yet fully understood. With the increasing emphasis in SME research on the interconnectedness of, and flows between, individual actors, the aim is to develop the understanding of how and which influences are relevant across varying decision situations. More specifically, the structural relations of decision makers provide access to novel information and allow validation of existing information. Access to content and the opportunity to validate have positive effects on the comprehensiveness of the SDM process. Validation allows the available information to be evaluated regarding plausibility and importance for the decision situation, enabling decision makers to process the information more selectively, leading to increased efficiency.

Second, empirical research on SDM in SMEs focuses typically on the influence of structural and relational aspects of social ties on venture formation and initial enterprise gestation (Batjargal & Liu, 2004; Carter, Gartner, Shaver, & Gatewood, 2003; Lee & Jones, 2008; Yli-Renko, Autio, & Sapienza, 2001). Few studies focus on later phases (see for an exception Jack, Moult, Anderson and Dodd, 2010). In addition, high-stake decisions for SMEs are often made beyond those initial phases. Empirical research on the effects of social ties on SDM in large organizations focuses on a wider variety of phenomena than the initial phase of an organization's existence, such as development, innovation and resource procurement. This chapter aims to extend the insights of the effects of social ties on those decisions in SMEs.

4.1 Theoretical framework and hypotheses

Strategic decisions lead to the commitment of resources and people to certain courses of action and not to others. These commitments focus attention and allocate means that are not easily reversed or diverted. The extent to which these

decisions are effective – that is, the extent to which decisions achieve the objectives established by management at the time that they are made (Dean & Sharfman, 1996) – determines what the organization focuses upon and whether this enables it to develop further and increase performance. When making decisions, decision makers in SMEs draw on their experience, knowledge and variety of social ties to form their judgment (Westhead et al., 2009).

Although social ties are singled out in venture founding research (Zhang, 2010), their influence on SDM processes in entrepreneurial studies is acknowledged as a faceless environment that provides information. Research on the ties of external directors (Kor & Sundaramurthy, 2009), the role of third parties such as consultants (Saxton, 1995) and external ties (Yoo, Reed, Shin, & Lemak, 2009) has found that SDM is affected by the internal (through actors that are a part of the SME, such as employees) and external (through actors that are not a part of the SME, such as business relations with other organizations, but also family) acquisition and analysis of information. This adds to the stock of information that decision makers use and shapes the interpretation that precedes their decision (Forbes, 2005b; Heavey, Simsek, Roche, & Kelly, 2009).

The comprehensiveness and centralization of the decision process will be different between small and large firms as a consequence of differences in resource availability. Comprehensiveness is generally expected to be lower for smaller organizations than for larger ones, due to greater resource availability within larger firms (which varies from capacity to collect information to staff members scrutinizing and testing decisions) when compared to their smaller counterparts (Eisenhardt & Zbaracki, 1992; Liberman-Yaconi et al., 2010). The literature on small businesses presents successful decision makers as individuals (Escribá-Esteve, Sánchez-Peinado, & Sánchez-Peinado, 2008), suggesting that they are the dominant relevant factor within decision making. This implies that centralization is a positive feature of the SDM process (Liberman-Yaconi et al., 2010) yet, Forbes (2005b) found that a certain degree of decentralization plays a positive role in performance: namely, when decision makers in small firms involve employees in the process.

In order to understand why some decisions have higher decision effectiveness than others, both characteristics and the social ties of the individual decision maker have to be taken into account. Given the decision situation, the key decision maker processes information and knowledge that is available to them by

education, experience or social ties. The following sections introduce the main hypotheses to be tested.

4.1.1 Human capital

Human capital refers to the stock of skills and knowledge gained by a worker through education and experience; it is embodied in the ability to perform labor so as to produce economic value (Becker, 1964). Human capital theory contends that acquired knowledge and skills can lead to better performance, as is inherent in any type of capital (Lin, 2001). It refers to the capital vested in individuals (education, experience, and natural talents) which is not easily transferable to others, and the forms which have become public property (the stock of knowledge in the public domain) (Piazza-Georgi, 2002). Human capital can be reflected by attributes (e.g. education) relevant for performance in several areas (economic activities) and more specific contexts (e.g. professional experience) (Westhead, Ucbasaran, & Wright, 2005; Zhang, 2010).

Due to the highly centralized nature of SDM in SMEs, human capital is especially important for economic performance, but is not necessarily productive for the survival of small firms (Gimeno, Cooper, & Woo, 1997). Research on the role of human capital in explaining entrepreneurial development has shown that it is most important at the start-up stage and less so for entrepreneurial progress compared to social capital (Davidsson & Honig, 2003). However, this does not mean that it becomes totally unimportant at later stages. Pre-existing knowledge systems and the skills repertoire of managers are based on their prior professional experience and education (Hambrick & Fukutomi, 1991), meaning that the information processing in a specific decision situation will be affected by the knowledge and procedures that are part of the individual decision-maker's cognition (Kor & Sundaramurthy, 2009). Hence, human capital helps to explain the strategic choices and inclinations of management (Hambrick, Finkelstein, & Mooney, 2005a).

The more decision makers believe they are knowledgeable and competent, the greater the risk they are willing to accept, or the more confidence they have in decisions undertaken to attain their goals (Heath & Tversky, 1991; Mullins & Forlani, 2005). In addition, they also perceive more opportunities (Erikson, 2002; Krueger & Dickson, 1994). In conclusion, higher levels of human capital lead to increased information processing skills, enabling higher levels of performance at

the individual (Coleman, 1988; Kor & Sundaramurthy, 2009) and organizational (Davidsson & Honig, 2003) level. Therefore, it is posited that the impact of human capital on decision outcomes is mediated by evaluative judgments.

4.1.1.1 Experience

Smith, Mitchell and Mitchell (2009) find that level of experience is an important asset for information processing. Accordingly, experienced entrepreneurs process information differently from novices, since they use domain specific expert scripts and have more elaborate arrangement scripts that consist of an understanding of venture networks, resource possession, idea protection and venture-specific skills. This means that SME decision makers, can process information more to their advantage if they possess these relatively elaborate cognitive scripts (see Gimeno et al., 1997). Decision makers with higher levels of experience are advantaged by having dealt with similar situations or contexts previously. This prior experience is useful in assessing the decision situation, since previous experiences are encoded as cognitive schema and scripts (Iederan et al., 2009). Therefore, risk-acceptance levels will be higher with greater experience levels because decision makers believe they know what will occur and that, based on their prior experience; they can work through the challenges in order to obtain higher levels of decision effectiveness. Therefore, the hypothesis runs as follows:

Hypothesis 1: *Entrepreneurial experience positively impacts on level of risk acceptance in the decision situation.*

Experienced decision makers are able to evaluate decision-related information better by relating it to previous experience and thus, can elaborate more complex and accurate cognitive scripts (Iederan et al., 2009; Smith et al., 2009). Ultimately, this will increase their confidence in the decision process. However, the role that decision comprehensiveness can play here is a more important factor. According to McMullen and Shepherd, 'more knowledge can lead to overcoming belief-related doubt that would otherwise prevent action' (in Heavey et al., 2009, p. 1293). In other words, more information and analyses increase the level of confidence in a decision (Adidam & Bingi, 2000). Therefore, the second hypothesis is as follows:

Hypothesis 2: *Entrepreneurial experience positively impacts on level of confidence in the decision situation.*

4.1.1.2 Level of education

Education is an important asset in evaluating the decision situation as it translates into general and abstract knowledge structures. Highly educated decision makers have the advantage of more general knowledge and – if they have studied their current professional field – specialized knowledge (Piazza-Georgi, 2002). With increasing education levels, training experience and perspectives become more specialized and focused, thereby creating greater consistency in cognitive models (Hitt & Tyler, 1991). Papadakis et al. (1998) found that highly educated decision makers required more information and analyses in their SDM process. Gimeno et al. (1997) confirm the same tendency for entrepreneurs, which may lead to delays in, or present constraints on, information processing. It appears that higher levels of education lead to a greater need for comprehensiveness. However, given the lower availability of resources in SMEs, this need may remain unfulfilled. Higher levels of education do play a significant role in risk identification, as they help to make sense of the situation (Winch & Maytorena, 2009). Therefore, risk-acceptance levels are expected to be higher where there are higher education levels:

Hypothesis 3: *Education positively impacts on level of risk acceptance in the decision situation.*

If fulfilled, the requirement of more information and analyses by decision makers with higher levels of education (Gimeno et al., 1997; Papadakis et al., 1998) ultimately lead to more comprehensive decisions which generate stronger belief and trust and positively affects the amount of resources and time spent during implementation (Adidam & Bingi, 2000). Therefore, it is hypothesized that:

Hypothesis 4: *Education positively impacts on level of confidence in the decision situation.*

4.1.2 *Social capital*

Social capital is broadly employed and discussed in the social sciences, political sciences, economics and organizational research (Lee, 2009; Portes, 1998). Various authors indicate that social capital is a multidimensional construct: Nahapiet and Ghoshal (1998) distinguish cognitive, relational and structural dimensions, while Koka and Prescott (2002) distinguish information diversity, volume and richness, and Adler and Kwon (2002) distinguish bridging and bonding, and a combinatory group of these two. The structural dimension of social capital focuses on the position of a particular actor in a group of connected actors (Nahapiet & Ghoshal, 1998); it is an important antecedent of decision outcomes. By being connected to other actors, individual decision makers in SMEs are influenced by the diverse pools of knowledge that flow from these ties (Stam & Elfring, 2008). Structural social capital is represented by the range of actors that help tackle the preconditions of limited processing capability and intelligence gathering by increasing decision comprehensiveness for the decision maker (Brouthers et al., 1998; Heavey et al., 2009; Talaulicar, Grundei, & von Werder, 2005). This range of actors consists of those located within the boundaries of firms and beyond, affecting the SDM process and organizational performance (Houghton, Smith, & Hood, 2009; Leana & Van Buren, 1999; Stam & Elfring, 2008).

The effects of social capital on the decision process are deemed important for SME decision makers in obtaining decision effectiveness because the input for information processing, both in terms of content and validation, in the decision situation is mostly delivered through social ties (cf. Brouthers et al., 1998; De Carolis et al., 2009; Heavey et al., 2009; Smith et al., 1988; and Westhead et al., 2005). Social capital becomes a social liability if actor behavior becomes constrained and suffers from negative ties in the social structure: for example, in terms of promotion chances being blocked by others, or crucial information being withheld (Gabbay & Leenders, 2001). The effects of social capital are not inherently positive (Warren, 2008), but also produce negative outcomes in the form of social liabilities such as coordination failure (Gabbay & Leenders, 2001). Previous research shows that colleagues in commercial banks play an important role when taking decisions (Mizruchi & Stearns, 2001), that social capital is more important for entrepreneurial progress compared to human capital (Davidsson & Honig, 2003), and that employee involvement in SDM in small firms ultimately

benefits performance, whereas the involvement of external advisers does not (Forbes, 2005b).

Research on structural social capital is well represented in entrepreneurial and SME research (see Cooke & Wills, 1999; Mosey & Wright, 2007; and Westlund & Bolton, 2003) but its relation with cognitive social capital is under-researched (Lee, 2009). This is relevant here since this dimension focuses on the social interactions between actors and their shared understandings (Anderson & Jack, 2002; Lee, 2009), which is a crucial aspect of every SDM process.

Shared understanding is essential for information processing in decision making, both in terms of how fast the incoming information is understood and incorporated into already existing cognitive schemas, and the validation of the latter. In other words, if these inputs connect well to the decision makers' current stock of knowledge, information processing will be more efficient and effective. The general discussion on this aspect of social capital states that there are different views on how structural social capital leads to beneficial returns for individuals (Lin, 2001). Social interactions between people who are more or less part of the same collectivity provide certain resources and benefits, while social interactions between people who are not provide other resources and benefits (Davidsson & Honig, 2003). This echoes Burt's (1992, 2000, 2005) work on social capital and structural holes, in which actors that function as a bridge between otherwise disconnected actors constitute benefits and resources otherwise unavailable to the (indirectly) linked actors. This view is juxtaposed with the view that densely connected actors can share valuable resources more easily in order to achieve benefits (Coleman, 1988, 1990).

Social capital works in instrumental actions not accounted for by human capital as it facilitates information flow and exerts influence on individuals (Lin, 1999). According to Wu (2008), information is an antecedent of performance and one of the key benefits of social capital. Therefore, it is relevant to consider structural social capital in order to understand how information and influence shape evaluative judgments and affect decision effectiveness. The presence and use of structural social capital makes further validation of available information possible. Therefore, it is posited that the impact of social capital on decision outcomes is mediated by evaluative judgments.

Structural social capital is conceptualized here as breadth of social capital. This refers to the number of sources or channels that the decision maker relies upon (Laursen & Salter, 2006), being the variety of actors that are active to

provide information to inform the evaluative judgment (Borgatti et al., 1998; Harrison & Klein, 2007). Decision makers influenced by a higher breadth of social capital have the advantage of more information flowing towards them, and by definition have a more comprehensive interpretation of the decision situation (Heavey et al., 2009).

For example, external advisers shape thinking in two critical ways (Forbes, 2005b). First, they provide information and behavioral examples unavailable to the SME decision maker; second, they provide self-development opportunities through interpersonal interaction. Besides the input sought by the decision maker from these ties, some will actively attempt to gain access to the SME decision nerve centre (see Saxton, 1995), either by endorsement of external power holders, authorities or law. However, external advisers do not always prove a more positive influence compared to the contributions by internal employees (Forbes, 2005b). The likelihood of information arising through intra-organizational networks being more suitable, or compatible for integration, with the decision maker's stock of knowledge is higher than if it came from outside the organization, due to more highly developed cognitive social capital. A greater breadth of social capital leads to more diverse information and knowledge concerning the decision situation which leads to increased internalization by the decision maker if the inputs are absorbed (implying potentially higher comprehensiveness), especially if ties are strong (Liesch & Knight, 1999; Nebus, 2006).

The influence of a more broad range of ties aids the assessment of the decision situation, since the received information supplements or validates the information the decision maker already has. While it reduces the resource limitations on the one hand, it helps overcome cognitive limitations of the individual on the other, providing decision makers with a more complete and accurate assessment of the decision situation. Risk identification, as a result of having a more comprehensive picture, will be easier (Winch & Maytorena, 2009). Therefore, risk acceptance levels are likely to be higher for greater breadth of social capital due to the decision makers' belief that they have accurately assessed the decision situation:

Hypothesis 5: *The breadth of social capital positively impacts on the level of risk acceptance in the decision situation.*

Moreover, due to greater comprehensiveness, confidence is also likely to be positively influenced by the breadth of social capital. Belief and trust in the decision by decision makers is higher (see Adidam & Bingi, 2000) as the information arising from various sources provides a more complete overview of the decision situation. The chances that vital information might be missed are likely to decrease when various sources have made a contribution:

Hypothesis 6: *The breadth of social capital positively impacts on the level of confidence in the decision situation.*

4.1.3 Evaluative judgments (risk acceptance and confidence)

The manner in which the mental representations of decision makers are shaped has a long history in research. Although Walsh (1988) found that functional domain is not necessarily the limiting factor for ill-structured decisions such as strategic decisions, Dearborn and Simon (1958) did recognize the role that functional domain plays in limiting decision makers. These limits are a function of their own starting point or their function within the organization. It is information processing that provides the decision maker with a frame in which the complexity of the decision situation is manageable. Thus, interpretation of individual-level inputs for the strategic decision process (education, experience and social capital) shapes mental representation (Hastie, 2001; Iederan et al., 2009; Mullins & Forlani, 2005).

Inputs stemming from human and social capital can have psychological effects on managers, leaving them better equipped to act decisively in the decision situation (Eisenhardt, 1989). The mental representation built through these inputs provides the basis for judging and subsequent decision making. Interpretation and unambiguous representations increase confidence in decision processes (Hastie, 2001; Lee & Dry, 2006). In general, higher confidence levels lead to allocating more resources and time to implementing strategic decisions (Adidam & Bingi, 2000), increasing the likelihood that the consequences of these decisions will be favorable. A similar line of reasoning applies to risk acceptance. Mullins and Forlani (2005) argue that risk-taking behavior operates at the individual level rather than at the organizational level. For low-risk choices, risk perception is more relevant than risk propensity, whereas risk propensity is more relevant in high-risk choices. This means that the risk-taking behavior depends on an

assessment of the risk inherent in a particular situation and thus, is situation-specific (Mullins & Forlani, 2005; Sitkin & Pablo, 1992).

Decision makers who accept the risk level inherent in a situation are expected to attain higher levels of effectiveness. They rely on their skills to navigate through the steps that entail risks, although this may indicate an illusion of control rather than real control (Mullins & Forlani, 2005), as they believe they know what will occur and how to handle it (Krueger & Dickson, 1994). Hence, they expect to achieve the objectives for which the decision is taken. The higher the confidence level and level of risk acceptance, the higher decision effectiveness will be.

As argued previously, human and social capital are important antecedents of evaluative judgments. The greater the experience, the more likely decision makers will believe that they recognize the essential combinations of aspects correctly (Sitkin & Weingart, 1995). Decision makers recognize combinations of aspects from prior situations (e.g. cognitive scripts), or from generic templates based on their abstract knowledge. This leads to positive effects on the evaluative judgments of the decision situation. Furthermore, Mullins and Forlani (2005) indicate that entrepreneurs who dare to venture into big decisions with greater opportunities for potential gain and loss, do so as their skills and prior history gives them confidence that they will succeed as they recognize the nature of the decision and judge it in terms similar to the situation they believe is being repeated. Based on prior experience and education, it is likely that they will capture the most relevant aspects of the decision situation and work through them in order to obtain higher levels of decision effectiveness.

The influence of structural social capital on outcome variables focuses mostly on positive outcomes, such as knowledge exploitation through knowledge acquisition (Yli-Renko et al., 2001), the creation of cognitive social capital through communication (Lee & Jones, 2008), how networks are created and leveraged within and among companies to nurture innovation (Kelley, Peters, & O'Connor, 2009; Paruchuri, 2010), and its influence on the progress of new venture creation through cognitive characteristics (De Carolis et al., 2009). The structural social capital that is available to the decision maker creates opportunities for social capital transactions (Adler & Kwon, 2002; Anderson & Jack, 2002). However, the mere presence of ties does little to account for the likelihood that social capital effects will materialize. Benefits such as information and influence do not materialize simply from the presence of ties (Wu, 2008), but also from the

interdependence of types of ties such as horizontal versus vertical alignment (Rank, 2008). Hence, structural social capital tells only part of the story. The social interactions of decision makers with actors in their networks facilitate the flow of information, but it is the interpretation and integration of this information that allows social capital effects to materialize for the decision at hand.

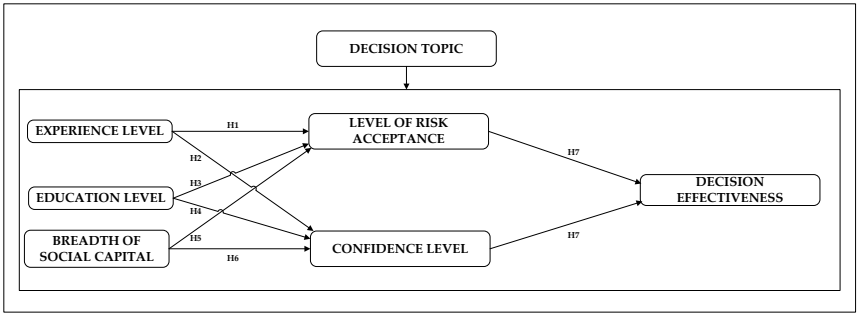
In terms of evaluative judgments of the decision situation, this means that the greater the breadth of social capital, the more accurate the judgment, thereby increasing the chances of higher levels of decision effectiveness. The comprehensive picture will facilitate risk identification and provide confidence in the decision situation. The influence of a more broad range of ties aids assessment of the decision situation, since the received information supplements or validates the information that the decision maker already possesses. It provides a greater sense of having considered all possibilities increasing commitment in terms of the time and resources decision makers have at their disposal in the implementation phase. The above leads us to the following hypothesis on mediation of the evaluative judgments level of risk acceptance and confidence level:

Hypothesis 7: *The effects of education, experience and breadth of social capital positively impacting on decision effectiveness are mediated by level of risk acceptance and level of confidence.*

Figure 4.1 shows the overall theoretical model. The numbers next to the arrows correspond to the hypotheses. The final aim of this chapter is to explore the extent to which the hypothesized relations depend on the context of strategic decisions. Decision characteristics have been demonstrated to be relevant in this respect (Elbanna & Child, 2007b). One of these, decision content, has received limited attention (Bozeman & Pandey, 2004). Decision content has been examined as a reason for participation and for its consequences for strategic decision processes (Hickson et al., 1986). It affects those who will be involved, what will be decided on and how the process will unfold. The matter being decided will affect who is involved in the decision making and its execution, either by choice, necessity or obligation (Fiegener, 2005; Nebus, 2006). The social and political context of implementing strategic decisions is highly relevant in explaining the success of a strategic decision, but how this unfolds depends on the tactics and managerial activities employed during implementation (Miller, Wilson, & Hickson, 2004). It is expected that this will be visible in the effects of individual level inputs on

decision effectiveness, specifically social capital. Therefore, this chapter distinguishes between strategic decisions that, for their execution, primarily rely on parties within the organization versus decisions that require outside parties. These two groups are labeled internal and external, respectively.

Figure 4.1 *Specified conceptual model*



4.2 Method

4.2.1 Sample

The current study uses survey data that were collected by the Dutch research institute EIM Business & Policy Research. Commissioned by the Dutch Ministry of Economic Affairs, this survey aimed to collect statistics and explore how decisions in SMEs are made. It focused on those small business owners who had made at least one important decision in the previous three years (Table 4.1 reports the average number, which is 2.81). Data were collected by computer-assisted telephone interviewing. The 1203 interviewees were sampled across eight industries: manufacturing, construction, retailing, hospitality, logistics and transport, personal services, financial services and business services (the latter two were later combined into one category, commercial services). The number of organizations initially drawn from each industry was roughly equal, and no organization was to have more than 100 employees. Of these, 700 indicated having been involved in making an important decision in the previous three years. After a closer examination of the 700, 565 qualified for the current research since the decision was of a strategic nature. The number of important decisions taken in the previous three years as reported by the respondent could not be higher than 10 and the investment amount needed to be substantial. The 565

respondents used in the analyses were from manufacturing (13%), construction (10%), retailing (12%), hospitality (13%), logistics and transport (11%), commercial services (13%) and personal services (13%). Note that the data are not completely representative of small firms in the Netherlands at the time that the data was collected. For example, EIM (2004) reports that 5.2 percent of the small firms belong to the hotel and catering industry, whereas 12.5 percent of the small firms in the sample used for this chapter represent this industry. This means that the small firms in the hotel and catering industry are overrepresented. The preliminary analysis covered descriptive and bivariate statistics (Pearson correlation) in order to explore the data. Subsequent analysis with AMOS structural equation modeling with maximum likelihood procedure was used to test the hypothesized mediation model.

Table 4.1 Respondent, decision and SME characteristics

Characteristics	Frequency	Mean	SD
Gender			
Male	507		
Female	58		
Age	565	45.07	9.10
Number of employees	565	35.32	55.77
Investment amount of decision under analysis (* €1,000)	565	1087.60	4702.50
Number of important decisions taken in past 3 years	565	2.81	2.18

N=565

4.2.2 Measures

For the dependent variable, decision effectiveness, four items were included that were scaled on three-point Likert scales, including to what extent the strategic decision had contributed to: (1) turnover growth; (2) profit growth; (3) to what extent the decision maker was satisfied with the decision; and (4) to what extent the decision had led to the expected result (see Walker & Brown, 2004). Decision effectiveness is calculated as the sum of these items, with Cronbach's alpha for the scale at 0.664.

For the independent variables constituting human capital (experience level and education level), an open question was used for the former and an interval scale for the latter. The open question asked how long (in years) the decision

maker had been active as a small business owner. The number of years reported by the respondent was then entered in the analysis. For the education level, a (recoded) scale was used (ranging from 1 = primary school to 7 = university), in line with the suggestion by Piazza-Georgi (2002) that the quality is more relevant than the quantity of education.

For the independent variable breadth of social capital, the number of categories of actors was counted that were indicated by the respondent as having influenced the decision (cf. Laursen & Salter, 2006; Stam & Elfring, 2008). The actor categories that could be selected by the respondents were employees, family, advisers, relations with other businesses inside the sector and relations with other businesses outside the sector. This was presented to them as a fixed set of categories for which they could indicate whether actors from that category influenced the decision. This approach captures the types of actors that influence decision making, resembling a coarse version of the resource generator approach to measuring social capital (Van Der Gaag & Snijders, 2005).

It is coarse in terms of using only one undifferentiated resource indicator, namely 'influence' to measure the range of accessed influence in decision making. There is no discrimination as to the type of influence, meaning that in position generator terms there is no difference in prestige (Lin, 2001). Therefore, a sum score was calculated to indicate the breadth of social capital (ranging from 1–5, where 1 = one actor category influencing the decision, 2 = two actor categories influencing the decision, and so on). The interviewees could not further specify the number of actors that influenced the decision within a given category.

For the mediating variables, level of risk acceptance and confidence level, one item per variable was used, scaled on four-point Likert scales, including: the estimate of size of the risk, ranging from low to high level of risk; and the extent to which the respondent was convinced of the decision, ranging from high doubt to strong conviction.

4.3 Results

4.3.1 Descriptive statistics

The results from the descriptive and bivariate statistics are presented in Tables 4.1 to 4.3. Table 4.1 contains information on the sample. As far as the decision makers are concerned, males outnumber females (mean age, 45 years; mean firm size, 35

employees). The amount of money that was invested for the decision varies quite strongly (mean = €1,087,600).

Table 4.2 shows that the total number of decisions is unequally distributed over the different topics. These decision topics were coded based on the description provided by the respondents. The coding reflected the scheme employed within the Bradford studies (see Hickson et al., 1986). Based on those topic descriptions, those in the present sample were independently coded by two researchers. The coding resulted in an agreement between the coders of close to 80 percent (Cohen's Kappa = 0.797), which is considered a good level of agreement.

Two actors were mentioned relatively often by the respondents as influencing decisions, employees and advisers. Together they accounted for more than half of the influences reported by the respondents. Interestingly, the number of influences reported is close to one-third (30.4%) of the theoretical maximum (that is, if all parties indicated in the survey were to influence each and every decision). This means that not even one in three possible influences as designed in this questionnaire occurs while small business owners take decisions.

The two groups in Table 4.2 are the 'internal' and 'external' decisions. The former group refers to decisions that primarily rely on parties within the organization for their execution (27.5%). This group comprises reorganizations (covering internal restructuring of activities through people or organizational units), products (new or modifying products), services (new or modifying services), personnel (issues such as assessment and training), and inputs (finance and other supplies). The latter group refers to decisions that require outside parties for their execution (72.5%).

4.3.2 Structural equation model

First, all cases in the sample were analyzed (Model overall in Table 4.4). Next, only the cases for those decision topics (Table 4.2, top half) that rely mostly on internal parties for their implementation were selected and analyzed (Model internal in Table 4.4). Lastly, the cases with decision topics that rely mostly on external parties for their implementation were selected and analyzed (Model external in Table 4.4).

Table 4.2 Overview of decision topics and actors influencing decisions

Decision topics	Percent of total decisions	Emplo-yees	Family	Advi-sors	Own sector relations	Other sector relations
Reorganizations	11.7	37	12	42	15	11
Products	1.7	4	1	3	0	1
Services	1.9	3	2	4	4	2
Personnel	10.3	30	16	22	23	8
Inputs	1.9	3	2	2	0	1
Total (internal)	*27.5*	*77*	*33*	*73*	*42*	*23*
Technologies	28.3	46	48	62	41	22
Controls	15.0	32	23	43	25	14
Domains	0.7	3	1	1	2	2
Boundaries	18.4	35	35	45	29	17
Locations	10.1	22	24	21	9	8
Total (external)	*72.5*	*138*	*131*	*172*	*106*	*63*
Total [a]	858	215	164	245	148	86
Theoretical total [b]	2,825	565	565	565	565	565
Percentage of theoretical total	30.4	38.1	29.0	43.4	26.2	15.2

N=565

[a] *The total number of ties that influence the strategic decision is calculated by the number of times an actor is mentioned by the respondents across the topics.*

[b] *The theoretical total is calculated by multiplying the number of cases (N) with the number of actor categories in the columns (5)*

Data were checked for normality, and since the skewness indices ranged from −.67 to 1.24 and the Fisher Kurtosis Index ranged in the interval −.75 to 1.22, it can be concluded that the multivariate normality assumptions were met for all mediator and output variables. The relationships between the variables were tested via AMOS structural equation modeling (SEM) software version 6, using a maximum likelihood procedure. SEM was used as two mediators had to be included in the model: SEM allows the simultaneous test of several linear equations, and global fit indices are a better choice for global model evaluation than multiple regression modeling, which enables only partial tests of the model

components (Tomarken & Waller, 2005). SEM is a versatile data analytic technique which makes it possible to test several (mediator) variables and their interrelationships simultaneously while providing fit indices for the global model. The path model results are presented in Table 4.4.

Table 4.3 Means, standard deviations and correlations

	Mean	SD	1	2	3	4	5	6
1. Experience level	15.26	13.23	1					
2. Education level	4.82	1.59	-.211**	1				
3. Breadth of social capital	1.52	1.19	-.110**	.164**	1			
4. Level of risk acceptance	2.30	.88	-.137**	.112**	.130**	1		
5. Confidence level	3.51	.66	.025	.040	-.056	-.126**	1	
6. Decision effectiveness	5.18	2.38	-.070	.056	-.025	.003	.157**	1

*N=565, ** p<.01.*

Two categories of fit indices were used in the analysis: absolute and incremental (see Table 4.4 for the numbers, and Browne and Cudeck (1993) and Widaman and Thompson (2003) for a discussion on the threshold values of the different fit indices). The fit indices for the overall model (left column in Table 4.4) show that the model is not significantly different from the data and cannot be significantly improved (however, the TLI is close to, but below, the threshold level). When looking at the two groups, the model for the 'internal' decisions produces mixed results in terms of the fit indices. Chi-square is only marginally significant, which shows that the model does not significantly differ from the data, while the relative indices show that the model cannot be improved for these decisions. The model for the 'external' decisions produces clear results. The model is not significantly different from the data and cannot be significantly improved. Given the good fit indices, it can be concluded that Hypothesis 7 is supported. The impact of human (experience and education) and social capital (breadth of social capital) on decision effectiveness is mediated by evaluative judgments (level of risk acceptance and confidence).

Table 4.4 Results of structural equation modeling analysis

	Predictor	Outcome	Model Overall	Model Internal	Model External
H 1	Experience	Level of risk acceptance	-0.11*	-0.14	-0.10*
H 2	Experience	Confidence level	0.02	-0.04	0.04
H 3	Education	Level of risk acceptance	0.07	0.03	0.08
H 4	Education	Confidence level	0.11	0.11†	0.1
H 5	Breadth of social capital	Level of risk acceptance	0.06*	0.07	0.06*
H6	Breadth of social capital	Confidence level	0.06	0.14	-0.12**
H7	Level of risk acceptance	Decision effectiveness	0.02	-0.11†	0.06
H7	Confidence level	Decision effectiveness	0.16***	0.26***	0.13***
	Fit statistics [a]				
	Chi-square		4.163	6.469	2.689
	Degrees of freedom		3 (P=0.244)	3 (P=0.091)	3 (P=0.442)
	RMSEA		0.026	0.087	0.0001
	(NFI		0.957	0.851	0.966
	CFI		0.984	0.846	1.000
	TLI [b]		0.891	0.000	1.000

Model Overall N =565, Model Internal N = 155, Model External = 410
Standardized coefficients reported here († p<.10, * p<.05, ** p<.01, *** p<.001)

[a] *Threshold values reported between brackets after the explanation of the abbreviation. RMSEA: root mean square error of approximation (0.08), NFI: normed fit index (0.90), CFI: comparative fit index (0.90), TLI: Tucker-Lewis index 0(.90).*

[b] *The TLI scored negatively for the 'internal' model (-0.081), which is rounded to 0.000. It scored above 1.0 for the 'external' model (1.037), which is rounded to 1.000. The deviating values are the consequence of the correction procedures employed by AMOS for this index.*

The path analysis of the overall model shows the direction of the relations. Hypothesis 1 is rejected because of the negative coefficient. Hypothesis 2 to Hypothesis 6 are all confirmed because of the positive coefficient. However, looking at the mediation effect of the evaluative judgments, the effects of experience level are mixed. Experience level has a negative effect on decision

effectiveness through mediation of the level of risk acceptance whereas; it has a positive effect through confidence level. If the decision maker accepts low levels of risk, higher experience levels impact negatively on decision effectiveness. If the decision maker is confident, higher experience levels impact positively on decision effectiveness. The likelihood that decision effectiveness in terms of reaching the objectives that were intended to be achieved at the time of decision will be realized varies with the evaluative judgment that is influenced by experience level.

Education level has a positive effect on decision effectiveness through mediation of the level of risk acceptance as well as confidence level. This means that higher levels of education lead to decisions that are more likely to benefit the firm because of decision makers being confident and willing to accept higher risk levels. The likelihood that decision effectiveness in terms of reaching the objectives that were intended to be achieved at the time of decision are realized, does not vary with the evaluative judgment influenced by education.

Finally, breadth of social capital has a positive effect on decision effectiveness through mediation of the level of risk acceptance, as well as confidence level. Processing information from these sources and channels leads to decisions that are more likely to benefit the firm because of decision makers being confident and willing to accept higher risk levels. The likelihood that decision effectiveness in terms of reaching the objectives that were intended to be achieved at the time of decision are realized, does not vary with the evaluative judgment influenced by breadth of social capital. Based on the results of the overall model, it was found that the effects of the independent variables education level and breadth of social capital on decision effectiveness are positive through evaluative judgments, confidence level and level of risk acceptance. The independent variable level of experience shows mixed results.

The specified models for the two groups of decisions inform us about the moderation of the decision topic. The moderation effect is visible, as path coefficients and direction for the two models differ; except for Hypothesis 4 (the effect of education level on decision effectiveness through confidence level is positive in all models). The effect of education level on decision effectiveness through level of risk acceptance is positive in the model for which execution of the decision requires outside parties, whereas it is negative in the model for which execution relies primarily on parties within the organization. The effects of experience level and breadth of social capital are also mixed than those of

education level. Both these individual-level inputs invoke opposite effects on decision effectiveness, depending on the evaluative judgment through which the effect materializes in the two models. Moderation of the decision topic on the model matters for all individual-level inputs, considering the opposite effects in different models for all but Hypothesis 4. These mixed results can be related to the degree of control that the decision maker has when implementing the decision, which will be discussed in more detail below.

4.4 Discussion

In this study the focus was on the mechanisms that explain the impact of human and social capital on decision effectiveness. Previous research is extended and the important role of evaluative judgments in strategic decision processes is shown. Depending on the decision topic, the range of actors influencing the strategic decision has a positive or negative effect through the evaluative judgment confidence level as well as level of risk acceptance.

For confident decision makers who take decisions that require outside parties for their execution, negative effects on decision effectiveness materialize if the breadth of social capital is higher. If execution of the decision relies primarily on parties within the organization, positive effects materialize. This is in line with the findings of Adidam and Bingi (2000) and Forbes (2005b). With a greater breadth of social capital, comprehensiveness increases and provides more insight into the feasibility and desirability of picking certain options in decision situations (Heavey et al., 2009). The positive link between decision confidence and decision effectiveness is based on whether decision makers can devote enough time and resources to the implementation. If they can be influential in decision implementation, then they can make use of their skills and knowledge (cf. Beer & Eisenstat, 2000 and Mullins & Forlani, 2005). However, if a broad range of actors influence the decision, this effect turns out differently for internal decisions versus external decisions. In other words, increased breadth presents more information that may alleviate uncertainty in interpreting the decision situation, but does not tell us about the degree of control in the implementation phase. It lessens doubts about the decision itself, but does not directly affect the behavioral uncertainties in the implementation phase. Hence, the negative effects for the external model are vested in the greater extent of behavioral uncertainty or constraints in the implementation phase, as opposed to the internal model (cf. Beer & Eisenstat,

2000; Gabbay & Leenders, 2001; and Mullins & Forlani (2005). A possible explanation for this is that external parties lower the degree of control that the decision maker has over implementation. If decision makers rely on internal actors that are employed or hired by their organization, uncertainty about their behavior, actions, time and resources committed to implementing the decision is relatively low. The dependence of internal parties on the decision maker is higher than for external actors, because internal parties are in a relatively fixed working arrangement with the decision maker; the degree of control in terms of behavior over decisions that require outside parties is lower. This would suggest considering implementation variables that represent the degree of control by the decision maker.

If decision makers primarily require internal parties for execution of the decision, risk acceptance will be positively affected by breadth of social capital, but ultimately leads to negative effects on decision effectiveness. If implementing the decision relies primarily on parties outside the organization, positive effects materialize. Decision makers who accept high levels of risk for their high-stake decisions will be confronted with inertia for the implementation in their own organization. The degree of control that they have over the parties that are involved in the implementation may be higher, but by accepting high levels of risk they create uncertainty for those parties regarding their routines and behavior. This may be just a matter of resistance to change but especially within smaller firms, where resources are relatively constrained, attention and effort regarding the implementation of strategic change may suffer because limited resources also pertain to undertaking change and everyday work simultaneously. Thus, the higher level of risk acceptance as a consequence of higher breadth of social capital may foster resistance or other obstacles in executing decisions (see Nutt, 2008). With these in place, the effectiveness of the decision is likely to be lower. Involving outside parties for implementation requires a choice to be made regarding which party is contacted and contracted, which leads to selecting parties that are considered reliable to take part in decisions that carry risk.

The moderation by decision topics shows that the relation between level of experience and breadth of social capital for the internal versus external model is mirrored. Hence, sources of (in)effectiveness or (in)efficiency regarding information processing for decision effectiveness are configured differently for the different topics, suggesting that higher experience levels and greater breadth

of social capital can be an asset or liability, pending the topic of decision and the involved parties for implementing that decision.

Anderson and Jack (2002) posit social capital as a process that permits social capital transactions. This directly connects to another social capital dimension, namely the cognitive dimension. If social capital is considered to be a process, the development of a shared language is a consequence of structural social capital, not a simultaneously operating dimension. Lee and Jones (2008) conducted research that investigates the link between structural social capital and cognitive social capital. In their study on business start-ups, they find that cognitive social capital facilitates social learning. By approaching the study of social capital as a process in which different structural social capital configurations amount to different effects through information processing by individual key players, we can combine the effects of embedding social structures with actions and understand more precisely how decision makers in small firms overcome the bounded conditions of intelligence gathering and information processing. In the present research, we scratched the surface by looking at the comprehensiveness and validation of information in the SDM process and their consequences for decision effectiveness.

The findings of this study indicate the importance of social ties in SDM and subsequent implementation. The findings support the longstanding practical and research tradition that it is important for entrepreneurs to network in order to get access to clients, resources and other opportunities (Blackburn & Kovalainen, 2009; Lee, 2009). Network events are held to promote economic activity and provide initial business start-up support, stimulating the build-up of structural social capital, identifying entrepreneurial opportunities and providing the structural social capital for overcoming bounded conditions at other moments. The study here does not unequivocally confirm this, but it does suggest that for policy makers it is important to support network maintenance or management rather than only initial networking activities (see Hibbert, Huxham & Ring, 2008). The structural social capital that arises from networking activities serves as the springboard for later resource and information benefits, or support in implementation (see Westhead et al., 2009). Networking activities serve a broader purpose in maintaining economic activity than mere spot transactions. Thus, stimulating enduring collaborative relations may be worthwhile from a policy perspective, as well as a focus for future research.

4.4.1 Limitations of the study and recommendations for future research

This study has several limitations. First, from a content point of view, the argumentation on why certain conceptualizations are deemed appropriate may be convincing. However, the limited conceptualizations of human and social capital measures present the danger that the research did not fully capture the relevant effects, which can lead to underestimation or overestimation of the effects found.

Second, the findings should be interpreted with some caution regarding further development of research on structural social capital. Burt, Hogarth and Michaud (2000) found that although the structural social capital of successful French and American managers was rich in structural holes, it differed in range (French managers have a more limited range, operating with a less porous social boundary around their firms) and had negative emotions with bridge relationships (it is suggested that this is due to French people's reluctance to coordinate with people outside the chain of command). This suggests that a cross-cultural validation of effects is required, as there is no distinct variation incorporated in this research due to the focus on the Dutch context (see Greve & Salaff, 2003).

Finally, the evaluation of the two mediators is based on single-item measures and some of the exogenous variables are not interval scales. Therefore these are limitations for the SEM modeling, as argued by some scholars (Hair, 2009). However, others, such as Tomarken and Waller (2005), argue that SEM can be used in experimental designs as well (where exogenous variables are expressed as categorical variables), since these research designs rarely violate the multivariate normality assumption, which 'is more circumscribed than many researchers commonly believe' (Tomarken & Waller, 2005, p. 47). Low sample size is the most critical concern in using SEM (McQuitty, 2004) and this is certainly not the case in this study, where the sample size is higher than 200, which is a generally accepted rule of thumb for using SEM. The use of single-item indicators for the mediator variables remains a boundary condition of the present study. Furthermore, the use of a mixture of scales with different ranges is not considered problematic because the reliability of Likert-type scales does not depend on the number of points on the scale (Aguinis, Pierce, & Culpepper, 2009). In order to avoid statistical problems, it is important that the scale and the number of response options correspond with the respondents' ability to logically discriminate values for the underlying variable (Beal & Dawson, 2007).

Future research into the use and nature of inputs in SDM seems essential to understand the effects of human and social capital. De Carolis et al. (2009) point to the incorporation of cognitive factors to understand the impact of the social embedding in small firms in order to capture the processing of intra- and inter-individual cues that lead to action and performance. The increase in studies stressing the relevance of cognitive approaches for understanding SDM, combined with the relative absence of knowledge on the role of social ties in core processes for SMEs (Davidsson & Honig, 2003; Hoang & Antoncic, 2003) as compared to large firms, presents a relevant avenue for future research. By exploring not only the presence of information, resources and social ties, but rather what is done with the information, resources and influence stemming from social ties, the understanding of the dynamics of small firm core processes can be improved (Shaw, 2006) such as SDM. Furthermore, as Davidsson and Honig (2003) find in their research on venture creation and development, the effects of human and social capital can differ depending on the moment that they impact on the process under study. The present study suggests that the interplay between human capital and social capital depends not only on the moment in a flow of business activities, but on whether internal or external parties are involved in executing a decision: one is more conducive to positive effects on decision effectiveness than the other.

Another interesting avenue concerns research on group social capital, which introduces an interesting opportunity to add proximity aspects of social capital to the equation. The current research uses coarse categories of actors to identify the influences on SDM and treats them as atomic categories. The work on group and local social capital (Oh, Labianca, & Chung, 2006; Westlund & Bolton, 2003) lays a foundation for understanding the effects of the resources that become available through the (local) social relationships of group members, by looking at the characteristics of the relations as well as what would flow through them. A re-examination of the categorization of actors for this type of research would allow for so-called multiplex ties (interpersonal or organizational ties that contain more than one type of relationship, as playing tennis with your boss on the weekends) to be incorporated, and make measurements more valid and reliable. A family member also may be an employee. In the current set-up, the respondent was forced to choose between actors rather than accurately typify the relationship. By using more fine-grained measures for mapping social ties, crudeness in data gathering is reduced and the sources and effects of uncertainty become clearer.

The workings of the micro foundations and micro complexities that determine choice are clearly context dependent as far as the decision topic is concerned, as well as the range of ties that is included in SDM. This study has demonstrated that the effects of human and social capital for decision effectiveness are not straightforwardly beneficial as hypothesized. By researching the effects of these types of capital in varying strategic decision situations, it was found that their effects are contingent on the characteristics of the strategic decision in terms of decision content. This becomes visible only if evaluative judgments as mediating variables and decision topic as a moderator variable are included. The trade-off between experience and breadth of social capital in having effects on decision effectiveness through information processing particularly suggests a form of interplay between human capital and social capital. In line with earlier research, the present research results confirm the effects of human capital and social capital on small firm processes. It shows in which cases human capital is more of an asset than social capital, and vice versa. It also shows in which cases human capital is more of a liability than social capital, and vice versa. This means that the content of a decision in terms of whether primarily inside or outside actors are involved in its implementation plays a role in attaining decision effectiveness, despite the involvement of both internal and external actors in the phases preceding implementation. This is due to their role being different, since in the pre-implementation phase the internal and external actors influence the effectiveness and efficiency of the SDM process in terms of information content (comprehensiveness) and processing (validation); they are involved as their knowledge makes a difference to the process. In the implementation phase, internal and external actors are involved because of their action potential in implementing the decision.

4.5 Conclusion

This chapter aimed to make two contributions. First, a contribution to the literature by clarifying the role of social capital in SDM in small firms was made. The information processing perspective employed indicates that the input from social ties is processed and affects decision effectiveness. Liao and Welsch (2005) and Lee and Jones (2008) argued and demonstrated that structural social capital is a condition that must be fulfilled in order to create cognitive social capital. The present study shows that comprehensiveness and validation enable decision

makers to integrate knowledge more, providing benefits in terms of higher decision effectiveness. Structural relations are beneficial for decision makers in smaller firms to arrive at an informed evaluation of the decision situation and confirm the condition-like nature of structural social capital. This effect is visible in, and contingent on, which parties are involved in the implementation of the strategic decision.

Second, the chapter has extended the scope of empirical research on SDM in smaller firms in terms of social capital. As far as SDM is concerned, the focus has been mainly on high-stake decisions in the early stages of venture formation and initial development (Batjargal & Liu, 2004; Carter et al., 2003; Lee & Jones, 2008; Yli-Renko et al., 2001). By researching a wider variety of strategic decision topics that require the attention of decision-makers in SMEs, it was found that information processing by the central decision maker is a mechanism explaining decision effectiveness. The trade-off between level of experience and breadth of social capital in realizing decision effectiveness depends on involvement of primarily external or internal parties in implementation. This trade-off informs us about the interplay between the experience and social capital of decision makers, being contingent on the parties involved in the implementation stage. For decision makers in SMEs, this means that breadth of social capital and experience are either assets or liabilities for processing information effectively and efficiently in order to achieve decision effectiveness. Whether they are an asset or a liability for decision effectiveness through information processing depends on the extent to which the parties primarily involved in the implementation of the decision are internally or externally based. In this, they mirror one another in the sense that if breadth of social capital is an asset, experience is a liability, and vice versa. This informs decision makers that there is no one best way to achieve decision effectiveness, and calls for future research to explore configurational approaches to SDM in SMEs.

In Chapter 5, the differences between decision makers are explored in order to determine whether they search for information in different parts of their social networks. These differences are based on type of decision maker and the cognitive motivational trait need for cognition.

CHAPTER 5: NEED FOR COGNITION AND INFORMATION SEARCH IN STRATEGIC DECISION MAKING[5]

5.0 Introduction

Strategic decisions rely on the amount and quality of information available to decision makers, because it provides the input for the assessment and interpretation of decision situations. For these complex and impactful decisions, decision makers are likely to assess the information that is readily available to them and search for additional information. Information search by decision makers in strategic decision making (SDM) is influenced by individual level, as well as organizational level factors (Cooper, Folta, & Woo, 1995; Jemison, 1984; Narayanan et al., 2011). This suggests that differences between individual decision makers (such as motivation and cognitive abilities) and differences between organizations on whose behalf they decide (such as organizational routines and procedures) matter for information search. However, decision makers take different decisions even when they face similar circumstances and decision situations. This stems from the difficulty to establish unequivocal patterns in decision situations (Rajagopalan et al., 1993). To the extent that these individual and organizational level differences affect the information search by decision makers differentially, they provide us with relevant building blocks for understanding the reasons why decision makers decide differently. Since information search is essential for decision effectiveness (O'Reilly, 1983) and strategic decisions have major implications for organizational performance (Eisenhardt & Zbaracki, 1992), the above means that it is highly relevant to understand the factors that drive information search in strategic decisions.

This study tests the impact of individual level attributes on information search in various parts of their social network throughout the SDM process. These social networks are relatively important for decision makers, because of the information

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that is available through them for entrepreneurial and organizational processes (Aldrich & Zimmer, 1986; Birley, 1985; Carroll & Teo, 1996; Davidsson & Honig, 2003). The information found through these social networks assists decision makers in making sense of equivocal decision situations, as unequivocal patterns are difficult to establish (Anderson, 2008; Rajagopalan et al., 1993). This suggests that information search for SDM is likely to take place through these networks to the extent that the decision maker does not have information readily available. Besides, previous research indicates that social networks allow decision makers to validate information (Cross & Sproull, 2004). However, social networks of decision makers are not necessarily similar or identical. Differences between ego networks of decision makers in terms of structure and information flows impact on the possibilities to search for information. After all, similar network positions induce similarity in behavior (Mizruchi, 1993), but have not convincingly been shown to boost performance in attaining decision effectiveness and organizational performance. This is the case for network positions of actors within one network, i.e. structurally equivalent positions (Aarstad, Haugland, & Greve, 2010; Pallotti & Lomi, 2011), as well as for network positions of actors between networks (Chiesi, 2007; Lechner & Dowling, 2003).

The above suggests that the set of relations in a decision maker's social network provides access to a reservoir of potentially helpful information. This makes it relevant for decision makers to search their social network to retrieve and validate information. The opportunity for information retrieval and validation is present through the social network of the decision maker, but the actual retrieval and validation requires additional activity by the decision maker. Put simply, the opportunity also needs to be taken advantage of (Anderson, 2008). The type of decision maker and need for cognition provide the impetus to do so. In short, the presence of the social network provides the opportunity for decision makers to retrieve and validate information to benefit their strategic decisions, but it is their individual characteristics that propel them whether to take advantage of the opportunity and actually search the social network.

Research combining the relational context of decision makers with their cognitive motivation is scarce to absent in management and organizational research (see Narayanan et al., 2011). In terms of individual differences, a variety of traits that differentiates between entrepreneurs and managers has been explored (Stewart & Roth, 2007), although this approach did not provide clear-cut results (Endres & Woods, 2006; Wadeson, 2006). Previous research found that

there are differences between decision makers. Entrepreneurs and managers are differentially affected by cognitive biases and heuristics in their decision-making processes (Burmeister & Schade, 2007; Busenitz & Barney, 1997; Vermeulen & Curşeu, 2008), suggesting differences between these types of decision makers in information seeking and information processing mechanisms. Moreover, motivation has been explored as a core component of information search, but with inconclusive results (O'Reilly, 1982; Taylor & Dunnette, 1974). Based on recent insights from cognitive motivation research (Förster, Grant, Idson, & Higgins, 2001; Steinhart & Wyer, 2009), it is argued in this chapter that not achievement motivation in general is likely to drive information search in SDM, but the more specific motivation to become engaged in cognitive activities (cognitive motivation or need for cognition) (Anderson, 2008). Need for achievement does not account for differences between entrepreneurs and managers (Collins, Hanges, & Locke, 2004). Decision makers with higher cognitive motivation are likely to differentially search their social networks, compared to ones who have lower motivation to become engaged in cognitive activities. Taken together, the individual level attributes of type of decision maker and cognitive motivation are expected to account for differences between decision makers in information search in SDM. One would expect that the combination provides an explanation for searching information as a consequence of the initial organizational embedding of the individual decision maker and his/her motivation to obtain and process relative high amounts of information. The extent to which these coincide or diverge sheds light on why differences between individuals occur in information search.

5.1 Theoretical background and hypotheses

5.1.1 SDM and information search

Previous research treats rationality, intuition and political behavior as core dimensions of the SDM process (Elbanna & Child, 2007a; Papadakis et al., 2010). Although the current study does not aim to contribute exclusively to one specific dimension, the focus on why types of decision maker and their cognitive motivation cause differential effects on information search in their social networks most closely relates to the rationality and political behavior dimensions. The rationality dimension covers the extent to which the process is comprehensive, exhaustive, and analytical in terms of understanding the decision situation (Hart,

1992), focusing upon the gathering and processing of information relevant to the decision in order to take a well-informed decision. The political behavior dimension figures less prominently here by the involvements of stakeholders in the SDM process, but different types of interests and influences are not explicitly included here. The processing of information is given center stage in this chapter, connecting to the cognitive perspective on SDM (Narayanan et al., 2011).

The central assumption of the cognitive perspective of SDM is the key role that the mental representations of decision makers play in making sense of decision situations by providing the cognitive structure through which information is processed (Iederan et al., 2009; Porac & Thomas, 2001). However, this perspective tends to treat the information that enters the decision-making process as coming from a faceless environment, varying from beliefs *about*, perceptions *of* to enactment *of* the information environment (Narayanan et al., 2011). Decision makers' cognition is the focus taken by studies from the cognitive perspective, ascribing causal importance to cognitive structures and processes in the explanation of strategic choices made by top managers. In contrast to classic rational approaches, no observation of the objective environment is assumed. Previous research points to the added value of considering both the decision maker's cognition, as well as her/his context in order to understand how and why decision makers behave in decision situations (Anderson, 2008). The different types of decision makers, combined with the cognitive motivation of these decision makers, propel them to search their social networks for information in a differential manner.

Decision makers will reach out to validate their current information and to obtain additional information, if they require more than the readily available information. Exploration of the environment and engagement with internal and external stakeholders leads to successful strategy making, because decision makers will be better informed (Verreynne & Meyer, 2010). Research on the role of social capital and social networks in the strategic choice, nascent entrepreneurship and venture formation literature has recognized the relevance of networks and networking to obtain information and other resources to take decisions and discover, create and exploit opportunities (Aldrich & Zimmer, 1986; Anderson, 2008; Birley, 1985; Davidsson & Honig, 2003; Houghton et al., 2009). Most of the information gathered, analyzed and used in SDM does not materialize from thin air. It comes through the social network ties of decision makers, rather than from

an amorphous information environment. Therefore, it is relevant to investigate which part of the network decision makers use to search for information.

Effective search, however, is constrained by cognitive barriers such as prior knowledge and bounded rationality (Patel & Fiet, 2009). The specific instruction to search or the specific knowledge about the who, where and what of information directs information search of (prospective) entrepreneurs in their discovery process (Arenius & De Clercq, 2005; Fiet & Patel, 2008; Patel & Fiet, 2009). Combined with the aforementioned cognitive barriers, this directed information search resembles a constrained search area for information search. Decision makers are thus subject to cognitive barriers and a consideration set (O'Reilly, 1982; Patel & Fiet, 2009). The consideration set is not a specific strategic decision concept, but an entrepreneurial discovery concept that constrains the search for information for firm founding. It provides a fenced-in area in which information search takes place, rather than the open ended area propagated by classic models of rationality. This area, which encompasses "a group of information channels that offer frequent low-cost access to the type of signals already known to an entrepreneur" and "are information channels or low-cost sources of frequent signals" (Patel & Fiet, 2009, p. 503), may not harbor all the relevant and quality information required to take effective strategic decisions (O'Reilly, 1982). It does provide the search area for decision makers and presents thus the relevant part of the total information environment, which is engaged by the decision maker. As the specific knowledge is specific and unique to the individual, a consideration set is composed differently for each decision maker. Although the above conceptualization is specifically based on entrepreneurship research, it is assumed in this chapter that managers in large firms conceptually face the same limitations in terms of cognitive barriers and the consideration set. However, it may look very differently as they consider the who, where and what of information is fuelled differently through the differential embedding.

The dispersion of information in the consideration set can be understood in terms of the information being dispersed in the decision makers' social network. These social networks consist of a variety of actors tied to the decision maker through private (e.g. friends), organizational (e.g. employees), and/or external affiliations (e.g. associations / competitors). These distinctive parts of the total social network of the decision maker can be drawn upon by decision makers to search and retrieve information (cf. Anderson, 2008; Birley, 1985; Carroll & Teo, 1996; and Cooper et al., 1995), and have been used in previous research to show

that differences in accessing and leveraging different parts of networks lead to different outcomes (Houghton et al., 2009; Smith et al., 1988). A higher variety of information sources from these networks is expected to lead to more beneficial results (O'Reilly, 1982), preferably a combination of internal and external stakeholders for both small and large organizations (Hart, 1991; Verreynne & Meyer, 2010).

Carroll and Teo (1996) label the distinctive parts of the social networks of managers as core discussion networks and organizational membership networks. The core discussion network, referring to those ties to individuals with whom the focal actor discusses important personal matters, corresponds to the private network introduced above. The organizational membership network, referring to those ties to organizations to which managers formally belong, corresponds to the organizational and partially to the external affiliations introduced above. The organizational membership network is restricted to formal participation in organizations, which is underestimating the reach of informal social networks next to the formal social networks managers and entrepreneurs are a part of (Birley, 1985; Rank, 2008). Therefore, we explicitly allow for those parts of the social networks of managers and entrepreneurs to be included. This means that formal membership of an organization is not the inclusion or exclusion criterion for social network membership in the current study. This extension is necessary to accommodate those actors in the social networks that are not in interaction with the decision maker in any organizational fashion and is in line with earlier studies on information search (Cooper et al., 1995). This is also exemplified by the study by Arenius and Minnitt (2005) in which the likelihood to start a new venture increases if the prospective founder knows other entrepreneurs, which do not necessarily belong to an organizational entity to which the prospective founder belongs. The private affiliations can be characterized as the proximal part of the total social network of the decision maker, whereas the organizational and external affiliations can be characterized as the distal parts.

5.1.2 Type of decision maker

Research on the differences between and similarities of entrepreneurs and managers has shown that managers are less sensitive to cognitive heuristics and biases compared to entrepreneurs (Baron, 2000). Managers face lower levels of uncertainty if they gather information internally and externally; generally trust

their work setting compared to entrepreneurs; and are subject to historical trends, past performance and methods that direct their search and evaluation of information. This facilitates comprehensive decision making and decreases the use of biases and heuristics (Brodsky, 1993; Busenitz & Barney, 1997; Citroen, 2011; Liberman-Yaconi et al., 2010), although this does not mean that managers consistently take high quality decisions.

Entrepreneurs work in situations and under conditions that may increase the susceptibility to cognitive heuristics and biases (Baron, 1998; Busenitz & Barney, 1997), and prefer to or are required to act immediately on ideas with limited information (Baron, 1998). They have lower trust in their work settings than managers and feel the need to be in control (Brodsky, 1993). Entrepreneurs also tend to be more open to new options, rather than recycle options for decisions, compared to people in large organizations (Burmeister & Schade, 2007), and differ in the way they scan the environment (Stewart, May, & Kalia, 2008). Besides differences, similarities have also been found, such as in the area of locus of control (Brockhaus & Horwitz, 1982). Some studies state or conclude that no differences between managers and entrepreneurs exist. Endres and Woods (2006) state that they have no ground to expect differences from the behavioral entrepreneurial decision making perspective, and Norton and Moore (2006) concluded that the difference between entrepreneurs and non entrepreneurs did not differ in terms of risk taking propensity. As can be concluded from the above, there is ample research on differences, similarities and indifferences. This suggests that it depends on the topic or context whether differences are present or not.

Studies that compare entrepreneurs and managers on cognitive aspects together with the relational context in which strategic decisions are taken, are less abundant. Similarly, studies in entrepreneurship on motivation devote sparse attention to the relational context (see e.g. Carsrud and Brännback, 2011). The cognitive perspective strongly suggests that there is causal importance to structures and processes of cognition in the explanation of strategy and SDM (Iederan et al., 2009). However, as a recent review on the cognitive perspective shows, this has not gained foothold in theoretical or empirical research regarding the relational context of decision makers, such as entrepreneurs and managers (Narayanan et al., 2011). This is striking, given the relative importance of social networks and the information available through them for both.

Entrepreneurs and managers access different parts of their social networks simultaneously, allowing them to retrieve and search information relevant for SDM. Little is known about the differences in information search behavior between entrepreneurs and managers (Smith et al., 1988) and whether they exploit their proximal (e.g., family and friends) and distal social networks (e.g., organizational members, networks outside the organization) differently (Aldrich & Zimmer, 1986; Carroll & Teo, 1996). Previous research found that informal cooperation through social networks transcends formal organizational structure in SDM (Rank, 2008), that who you know affects what you decide (Cross et al., 2009) and who you are connected to has a pervasive influence on which information and knowledge one has access to (Anderson, 2008). Decision makers' (perceived) knowledge about what actors in their network know and the timely access to these actors account for the probability they will seek information from other actors (Borgatti & Cross, 2003), i.e. the consideration set. Entrepreneurs are often portrayed as opportunity grabbers and in the opportunity identification process they are heavily engaged in information search from a variety of sources (De Carolis & Saparito, 2006). Therefore, it is reasonable to argue that entrepreneurs (as opposed to managers) are intrinsically motivated to search for information in their social networks outside the organization. However, the extent to which this is directed purposely is unclear.

To achieve higher decision comprehensiveness, larger organizations often use decision support tools and have regulatory practices in decision making (Liberman-Yaconi et al., 2010). Decision makers in large organizations exhibit a decision style that reflects organizational values of rationality, formality and coordination (Smith et al., 1988). These regulatory practices (e.g., when to reach outside of the organization for relevant information, to involve organizational members in the decision process in order to increase decision acceptance), in combination with their decision style, could eventually overrule managers' lower intrinsic drive to search for information. In a similar vein, social cognitive approaches and social motivational research emphasize factors that explain the exchange of knowledge between provider and recipient (Quigley, Tesluk, Locke, & Bartol, 2007). These findings provide important insights in the structural, relational and perceptional aspects of social influences in decision-making processes. They stress the organizational and social embeddedness of decision makers and instrumental value that can be derived from being connected. They

do not necessarily explain why decision makers turn more to some parts of their network than others.

To conclude, because of the considerable amount of resources available to managers to search and evaluate information and their higher dependency on organizational routines and practices (which involve the use of and reliance on standardized decision practices and/or tools), it is argued that in terms of information search in SDM, managers are more organizationally embedded and, at the same time, engaged in boundary spanning search to a greater extent than entrepreneurs. The first hypothesis is:

Hypothesis 1: *Managers are more likely than entrepreneurs to search for information in their organizational and external social networks*.

5.1.3 Need for cognition

Shane, Locke and Collins (2003) stress the necessity of more theory on the impact of motivation on entrepreneurial decisions in the area of understanding the individual's decisions, rather than differences between individuals. Motivation research, in general, distinguishes between drive (dominated by push factors) and incentive theories (dominated by pull factors) (Carsrud & Brännback, 2011). Motivation research in entrepreneurship covers different types of motivations. These cover, among others, motivation as reasons or motives to start a firm, cost-benefit type of studies that explain the intent to start a firm, and psychological motives (Collins et al., 2004; Hessels, van Gelderen, & Thurik, 2008; Vivarelli, 2004). As indicated in the introduction of this chapter, the concern here is more with the push (cognitive motivation) than the pull factors (need for achievement), while explaining information search in SDM.

A highly relevant aspect of information search in decision making is the role of cognitive motivation seen as a dispositional tendency to engage in and enjoy effortful cognitive activities (Anderson 2008). Need for cognition is a central concept for cognitive motivation, which received substantial attention in the literature on individual differences (Cacioppo, Petty, Feinstein, Blair, & Jarvis, 1996), and is gaining attention in the literature on strategic choice (Anderson, 2008; Patel & Fiet, 2009). Individuals high in need for cognition tend to seek, acquire, think about, and reflect on, relevant information when solving cognitive tasks, while those low in need for cognition tend to rely on cognitive heuristics,

social comparison or others' expertise (Cacioppo et al., 1996; Cacioppo & Petty, 1982). Research on need for cognition shows it is positively associated with the amount of attentional resources allocated to unspecific information search (Fleischhauer, Enge, Brocke, Ullrich, & Strobel, 2010), with external information search effort (Verplanken, Hazenberg, & Palenewen, 1992; Verplanken, 1993), goal orientation (Fleischhauer et al., 2010), task-related advice (Curşeu, 2011), individual innovation behavior in cases of low or moderate job autonomy and time pressure (Wu, Parker, & De Jong, in press), and with less prejudicial behavior and dogmatism towards out-group members (Carter, Hall, Carney, & Rosip, 2006; Tam, Au, & Leung, 2008).

In line with Curşeu (2011), it is argued here that need for cognition has a positive impact on information search and advice seeking in general and for SDM in particular. In terms of SDM, the behavior following the manifestation of a high need for cognition leads to a higher decision comprehensiveness by increasing the decision rationality (Forbes, 2007). The amount of decision specific information is likely to increase because of the positive impact of need for cognition on general information search effort and engagement with cognitive tasks.

Previous studies show that decision makers high in need for cognition search across many information sources (Cacioppo et al., 1996), collect and process more detailed and factual information, and spend more time and effort on information acquisition and decision-making tasks (Verplanken, 1993). Decision makers low in need for cognition perform restricted information search and evaluation do not engage in careful information processing, and tend to rely more on simple cues, heuristics and stereotypes (Petty, Briñol, Loersch, & McCaslin, 2009). Moreover, previous research shows that need for cognition is positively associated with rationality in decision making (Curşeu, 2006) and when need for cognition is low, context aspects, such as more formalized organization, can compensate these low levels (Wu et al., in press). This suggests that the comprehensiveness of a strategic decision will be higher for decision makers who exhibit a high need for cognition than for those that exhibit a low need for cognition, save for situations in which the context provides drivers for decision makers with low levels.

High levels of need for cognition go with high levels of attributional complexity (Tam et al., 2008). This makes decision makers search more for information because of their motivation to explain human behavior, as they have a stronger preference for complex, rather than simple explanations, and have a stronger awareness of the power of social situation on human behavior (Fletcher,

Danilovics, Fernandez, Peterson, & Reeder, 1986; Tam et al., 2008). Decision makers high in need for cognition are, therefore, more likely to search for information in the organization and in its context, as compared to decision makers low in need for cognition (Carter et al., 2006). High need for cognition is also associated with less stereotyping and prejudicial behavior; therefore, it is also likely that people high in need for cognition acknowledge the added value of information search from different, rather than similar others. Hence, it is likely that the organizational social network, as well as the external social network, will be turned to for information and advice. The hypothesis runs as follows:

Hypothesis 2: *Decision makers high in need for cognition are more likely to search for information in their distal social networks as compared to decision makers low in need for cognition.*

The combination of *type of decision maker* and the cognitive motivational trait of *need for cognition* allows for fleshing out how effective search is affected by the organizational embedding of the decision maker and the motivation to search and process information. The latter indicates how information search in a decision situation is performed by those decision makers that have a high need to search for information and enjoy processing the information. The higher the need, the more effort to obtain information is undertaken. The former indicates the extent to which search is likely to be confined to professional contacts. The combination thus provides an explanation for searching information as a consequence of the initial organizational embedding of the individual decision maker and his/her motivation to obtain and process relative high amounts of information.

5.2 Methods

In order to test these hypotheses a dataset containing 293 respondents (49% managers, 51% entrepreneurs) from various sectors (business services, personal services and retail) was used. The respondents received a survey to report on the most important strategic decision in the past three years on a variety of aspects, relating to their motivational traits and their relational context. The respondents were from Dutch organizations, and consisted of entrepreneurs and managers. Respondents that founded the organization and were part of an organization with less than 100 employees were categorized as entrepreneurs, others were managers

(also see Verreynne & Meyer, 2010). The average age of entrepreneurs was 43.7 years; the average age of managers was 46.6 years.

The dependent variable is *information search*. It is operationalized as the involved social network in the SDM process, resembling indegree centrality (Wasserman and Faust 1994). This variable is measured by a number of 14 potential affiliations in the social network involved in the decision-making process by the decision makers. These parties are grouped as three parts of the social networks of decision makers, being the private social network (containing spouse, friends/acquaintances, family), the organizational social network (containing employees, board members, support staff, middle management), and the external social network (containing external investors, advisers/consultants, competitors, suppliers, associations, external collaboration partners, consumers/clients competitors and consultants).

The independent variables are *type of decision maker* (X1), which is measured as a dummy (manager 1, entrepreneur 2) and *need for cognition* (X2), which is measured using the 18-item need for cognition scale developed by Cacioppo and Petty (1982). The Cronbach's alpha for this scale is 0.805.

Control variables included are *age*, *gender*, *education*, *organizational size* (number of employees) and *autonomy* (i.e., the percentage of responsibility for the decision residing with the respondent in the present decision situation, resembling power). The hypotheses were tested by running three OLS regression analysis.

5.3 Results

The descriptives and correlations for the decision makers in the sample can be found in Table 5.1. These already provide an indication for differences in decision making and the need for cognition of decision makers. The regression analysis (Table 5.2) shows that individual level attributes are important drivers of information search behaviors in different parts of the social network. Step 1 inserts the control variables; step 2 the independent variables (X1 and X2). From the different models, it becomes clear that entrepreneurs perform information search predominantly in their private social network, and managers consult actors within the organizational social network. The external social network is not significant when the distinction between entrepreneurs and managers is taken into account. The need for cognition impacts on information search outside the

Table 5.1 Means, standard deviations and correlations

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1.Education	8.77	2.23	1									
2. Age	45.15	10.01	.028	1								
3. Gender	1.86	.36	.085	.094	1							
4. Organization size	43225	25851	.062	.021	.053	1						
5. Autonomy	74.33	26.40	-.157*	.079	-.067	-.164**	1					
6. Type of decision maker	1.51	.50	-.338**	-.148*	.026	-.164**	.370**	1				
7. Need for Cognition	3.70	.48	.203**	-.074	-.078	.012	-.118	-.262**	1			
8. Private social network	2.94	3.30	-.034	-.188**	-.031	-.108	.184**	.219**	.021	1		
9. Organizatio-nal Social Network	7.79	11.66	.272*	.118*	-.024	.147*	-.239**	-.563**	.246**	.012	1	
10. External social network	11.87	86.73	.061	.097	-.064	.044	.110	-.083	.054	.340**	.378**	1

*N=293, ** p<.01, * p<.05*

Table 5.2 Results OLS regression

Step/ predictors	Private social network		Organizational social network		External social network	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
1.Education	.001	.024	.255***	.051	.102	.047
Age	-.207***	-.180***	.113*	.022	.084	.072
Gender	.001	-.013	-.102*	-0038	-.101	-0.89
Organization size	-.083	-.062	.101*	.064	.065	.067
Autonomy	.181***	.128*	-.200***	-.035	.120*	.138**
2. Type of decision maker		.188***		-.454***		-.020
Need for cognition		.086		.165***		.121*
R^2	.08	.11	.15	.34	.04	.05
Adjusted R^2	.06	.08	.13	.32	.02	.03
F-change	4.59***	4.00**	9.33***	36.81***	2.21*	1.73*

*N=293, *p<.10, **p<.05, ***p<.01, standardized regression coefficients are reported for the respective regression steps, type of decision maker is a dummy variable 1 for manager and 2 for entrepreneur, social networks = Ln(nr of parties+1).*

proximal social group – people high in need for cognition acknowledge the added value of different others as information resources.

Hypothesis 1 hypothesized that managers are more likely than entrepreneurs to search for information in their organizational and external social networks. The results from Table 5.2 show that managers, indeed, are more likely than entrepreneurs to search in their organizational social network. No difference was found for the search for information in the external social network. The hypothesis is, thus, partially confirmed. Entrepreneurs are more likely than managers to search for information in their private social network.

Hypothesis 2 hypothesized that decision makers high in need for cognition are more likely to search for information in their distal networks, as compared to decision makers low in need for cognition. Table 5.2 shows that there is support for this hypothesis. Decision makers turn more to parties in their organizational and external social networks when they score high on need for cognition. The hypothesis is, thus, supported.

The results from the analysis show that marked differences exist between managers and entrepreneurs regarding which part of their social network is used in SDM. The entrepreneur uses the private social network for information search and the manager uses the organizational social network. There is no difference for them regarding the external social network. This is in line with studies that show the social embeddedness of entrepreneurs is highly relevant for searching information, while making strategic choices (Jack & Anderson, 2002), whereas managers rely on their organizational embedding (Citroen, 2011; Rank, 2008).

The results show that decision makers high in need for cognition search for information outside the proximal social group, while making strategic choices. This is explained by the attributional complexity of these decision makers, which drives them to unravel the decision situation and to increase decision comprehensiveness (Carter et al., 2006; Forbes, 2007; Tam et al., 2008).

5.4 Discussion and conclusions

In this study the impact of individual differences on information search in SDM was addressed. The literature on differences between entrepreneurs and managers by pointing to systematic variation on information seeking behaviors in SDM is extended. Moreover, cognitive motivation is shown to drive information search in distal, rather than proximal social networks. Information seeking in

SDM is essential for decision comprehensiveness, which ultimately increases decision effectiveness (Iederan et al., 2009). By tackling the effect of individual differences on information search, this study has important contributions to the cognitive perspective on SDM. Previous studies treated information search, more often than not, as an essential building block coming from a faceless or undifferentiated environment that exists outside the cognitive structure that was researched. Here, individual decision makers were looked at who face decision situations in which their networks were used for information search. The results show that for different types of decision makers and differences in need for cognition, different parts of the network were searched for information. Hence, treating the information environment as faceless in studies on SDM that work from the cognitive perspective leads to the exclusion of relevant factors for understanding why different individuals take the decisions they do.

Entrepreneurs activated their proximal network (their private social network), whereas managers activated their distal network (their organizational social network). The other social network characterized as distal (their external social network) was not differentially activated by entrepreneurs and managers. This result was found in earlier studies, where information was retrieved mainly from within the organization, as opposed to the outside of the organization for managers, as well as for entrepreneurs (Smith et al., 1988). That study did not include the private social network, however, and focused mostly on organizational membership networks, just as Carroll and Teo (1996). Other studies found that managers with larger social networks reported a greater diversity of information (Anderson, 2008), reducing strategic uncertainty. Causal information search is more directed when the central issue of the problem is implicated, as opposed to being highly ambiguous (Dukerich & Nichols, 1991). Decision makers who have the informational resources available to achieve high levels of decision comprehensiveness by extensively searching their networks are more likely to take beneficial decisions for their firms. However, the differential effect of which part of the network is activated and how that leads to beneficial strategic decisions and subsequent outcomes is a question for future research. This study presents a first step by showing that search is directed towards different parts of the network, rather than all parts of the network simultaneously. Given the differences in availability of resources and dependence on routines between large and smaller sized firms (Brouthers et al., 1998; Liberman-Yaconi et al., 2010), this research suggests that differences between these types of firms can

arise, taking into account the same setting. Hence, this research answers the call already put forward by Narayanan et al. (2011) and Anderson (2008) to stray away from conceptualizing a homogeneous environment when researching the information search behaviors of decision makers, and the benefits deriving from these. More important, it suggests a more fine-grained assessment of the causes why decision makers facing similar decision situations decide differently.

By including types of decision maker, different starting positions were accounted for, whereas previous studies mostly used only one type of decision maker. The explanation for the differences here between managers and entrepreneurs is related to the size of the organization and the individual characteristics that drive behavior. First, the size of the organization corresponds positively with the amount of informational resources and strategic support staff available for SDM (Brouthers et al., 1998; Liberman-Yaconi et al., 2010). Managers in this sample represented the relatively large organizations (100+ employees), who are likely to have more procedures in place and means available. Entrepreneurs represent relatively small organizations, and thus may lack these. Second, entrepreneurs tend to see procedures as confining and undesirable, leaving them to define their own work environment and parameters (Brodsky, 1993). This may lead to the deployment of heuristics and biases in decision situations, stimulating the entrepreneurial decision maker to look close-by rather than look at the horizon. Another way of seeing this is the way decision makers cope with the strategic uncertainty that is present in decision situations. The uncertainty in the decision situation pertains to different, and perhaps, more aspects for entrepreneurs than for managers. After all, managers have more 'givens', providing them with more confidence about the diagnosis of the causal web surrounding the decision problem at hand (Dukerich & Nichols, 1991). This may indicate that the complexity of the decision situation is perceived differently by these types of decision makers. It may also refer to differences in institutional context that has differential effects on the organization on whose behalf the decision maker decides, although findings there are mixed. Stewart et al. (2008) find that entrepreneurs from different institutional contexts do not differ in their information seeking behavior and environmental scanning behavior, whereas Iederan, Curșeu and Vermeulen (2011) find differential effects. This suggests that the link between uncertainty and complexity of the decision situation requires further study. Previous research has shown that when strategic uncertainty increases, the use of 'personal' sources increases (Elenkov, 1997). These sources

may provide the adequate understanding needed by decision makers to interpret unclear issues if environmental uncertainty is high (Daft & Weick in Elenkov, 1997, p. 294). Houghton et al. (2009) established that the more actors there are in the network of decision makers, the more strategic complexity they face. Street and Cameron (2007) conclude, based on their review, that external relationships are important for organizations and for small organizations, in particular, to survive, grow and develop. However, they are not deemed relevant for information search in SDM based on these results for the distinction between entrepreneurs or managers. This could mean that entrepreneurs and managers do not display differential behavior in searching this part of their networks, but may also point to a stronger context contingency of external relationships. Their main importance for the strategy may not lie in decision formulation in strategy making, but rather at another stage.

Decision makers with a high need for cognition searched their distal networks (i.e. organizational and external social network) for information. Why do high levels of need for cognition drive decision makers more towards distal networks than proximal networks? Three explanations are offered. First, the fact that decision makers high in need for cognition do turn to organizational and external social networks to search for information can be explained by attributional complexity. As a strong correlate to need for cognition, the motivation to explain human behavior exemplifies the stronger preference for complex, rather than simple explanation. By searching for information in distal groups, chances are that richer information becomes available on the decision situation at hand, i.e. reducing the framing bias that may arise in the proximal group (Hodgkinson, Bown, Maule, Glaister, & Pearman, 1999). As Iederan et al. (2011) show, need for cognition leads to increased cognitively complex representations.

Second, the link between cognitive motivation and achievement motivation provides an explanation. People high in need for cognition tend to seek, acquire, think about and reflect on relevant information when solving cognitive tasks, while those low in need for cognition tend to rely on cognitive heuristics, social comparison or others' expertise. The higher this need and thus cognitive activity regarding the task, the more information one tries to gather and process to meet this need. One would expect that distal networks either provide more diverse knowledge to supplement the reservoir of available knowledge or to validate (parts of it), rather than simply copying it. This enables decision makers to acquire information to take strategic decisions that can achieve benefits (Iederan et al.,

2009). Although previous research found that people high in need for cognition are not motivated by the reward value of success (Steinhart & Wyer, 2009), they are motivated to meet their performance expectancies more than people low in need for cognition, especially for difficult tasks (Dickhäuser, Reinhard, Diener, & Bertrams, 2009; Reinhard & Dickhäuser, 2009). It seems the case that for decision makers high in need for cognition, the search in itself is a means to an undefined outcome, rather than the means to a determined outcome in terms of certain benefits or mitigating certain threats. This would suggest that a decision is more a result of the process than of a specified aim, and effort exhibited by the decision maker is more a function of the need for cognition than the aim to achieve certain (strategic) goals. This relates to the strategic uncertainty that is inherent in the decision situation, which may hide or blur the specificity of the outcome aimed for. If goal clarity is low or absent, the search for information supplies one with the input to clear up the uncertainty, and thus plays an important role towards achievement. Hence, when it concerns decision situations in which uncertainty and goal unclarity (agreement/ desired outcome) are low, the achievement of the goal is foremost in driving search behavior (see Dukerich & Nichols, 1991). The network is used to navigate the information environment to find information to arrive at a certain outcome. In situations in which strategic uncertainty and goal unclarity are high, the achievement is not the driver, as one does not necessarily know where one wants to end up. Hence, the navigation of the information environment by means of the network serves to identify the achievement. As the specific outcome in terms of a decision is not known, relatively remote pools of knowledge are consulted.

Third, the cause may lie in coping with the strategic uncertainty as experienced by the decision makers as described above. Decision makers high in need for cognition have the tendency to search for more diverse information (Anderson, 2008), it is their way of dealing with perceived strategic uncertainty as a consequence of the constraining and enabling features of the structural configuration of social networks to which they have access. The activated social network in the decision situation is thus very decisive in terms of which information can contribute. In other words, the consideration set provides a conceptualization of the information space decision makers can access and makes decision makers aware of the limited accessibility of decision relevant information next to their individual limitations.

Combining the strategic complexity and uncertainty of the decision situation, this suggests that need for cognition is a driver for which parts of the network will be searched for information, but it is the capturing of this complexity of the situation by the decision maker in a cognitive scheme that allows decision makers to deal with the uncertainty. Cognitive barriers and the consideration set should play a role in future research to further the understanding of the individual decision maker in its social network context. This way, a richer understanding can be developed of the reasons why decision makers facing similar decision situations take different decisions

This study set out to test the impact of individual attributes (cognitive motivation, type of decision maker) on information search in various parts of social networks during the SDM process. The results suggest that entrepreneurs and managers use different parts of their respective social networks to search information for their SDM. This raises awareness of the specific role that the social and organizational embeddedness of different types of decision makers plays. The type of decision maker corresponds strongly with which part of the decision makers' network is used to search and retrieve information. As a consequence, the way the decision situation is understood is derived more strongly from certain parts of the network than others. Relevant information from these distant sources is either not included or solely through interpretation of the private or organizational social network, despite the direct link with these actors. A more likely option is that this external social network becomes relevant in another stage of the process.

Decision makers with a high need for cognition explore the complexities of decision situations by searching for information in their distal social networks rather than their proximal one. This leads to higher decision comprehensiveness, because of the alternative and complementary views gathered. This does not mean that outcomes and performance will benefit (Forbes, 2007), but it suggests those high in need for cognition aim to enrich their understanding by searching for information removed from their proximal group. This informs us on which parts of the network are used by decision makers, if they have the tendency to engage in effortful cognitive activities while making strategic decisions. Explanations for this lie in the links between need for cognition with attributional complexity, achievement motivation, and coping with perceived strategic uncertainty.

This indicates the relevance to consider studying SDM from the network perspective in combination with cognitive motivations more in detail in future studies. This allows us to understand the different decisions taken by decision makers more in depth. In Chapter 6, the conclusions of the studies in this dissertation will be presented.

CHAPTER 6: CONCLUSION

6.0 Introduction

Two approaches formed the foundation of this dissertation, namely the cognitive approach and the social network approach. The latter, geared to the adaptive perspective in strategic decision making (SDM), studies decision making by attributing causal significance to the system of relations that affects decisions. It provides the channels through which the information reaches the decision maker. The former, geared to the interpretative perspective in SDM, studies decision making by attributing causal significance to the cognitive structures and processes of key decision makers. It provides the cognitive structure required to process the information. The complementarity of the two approaches was the perspective from which SDM was approached and researched. The overarching research question, presented in Chapter 1, is:

What is the influence of social networks on strategic decision making?

To answer this question, four subquestions were researched:

a. What is the influence of social networks on the decision nerve center?
b. What is the influence of social networks on the mental representation of the decision maker?
c. What is the influence of social networks on decision outcomes?
d. How do social networks get accessed by different decision makers?

The complementarity of the interpretive perspective, combined with the adaptive perspective on SDM, provides a view that enables the understanding of how the decision nerve center comes to possess the information it processes to take the strategic decision in the face of the decision situation. It helps the decision nerve center, i.e. the key decision maker, to assess the decision situation. By studying the influence of the social network in which the decision maker is embedded and the way their own and their network's inputs are handled, the effects on decision outcomes is explained.

The studies provide evidence that social networks have an effect on decision outcomes through the mental representation of the decision maker. Part of this

variation can be accounted for by the cognitive processing of the intelligence and resources received from the activated social network, but there is more. Individual characteristics may affect the part of the network that becomes activated in the decision situation, adding an indirect effect of individual characteristics to the direct effect of individual characteristics on the mental representation. Furthermore, the models were found to be moderated by context factors, which also account for variation in how resources and intelligence play out for decision outcomes through cognitive processing.

The above suggests an important but perhaps also confusing role for context factors and individual characteristics in SDM research when the formulation process is conceptualized as a cognitive process. No context factor included in the studies was researched as an antecedent and moderator at the same time, as did no individual characteristic proved to be an antecedent of both the mental representation and part of the network that was activated to search for information. However, the exact division of labor within the set of context factors and within the set of individual characteristics is not clear. In other words, what is the role of which factor or characteristic in shaping the formulation process, and its subsequent outcomes? Which ones are antecedents and which ones are indirect or moderating effects? Unfortunately, no overall model can be tested here despite this conclusion, as there is no data set available that contains all variables tested here in the separate chapters. Gathering a data set covering all aspects of context included in the specific studies here would make possible such a disentanglement of the roles of these factors and characteristics. Bear in mind that the context factors here are not representative of the full array of context aspects that can be included on studying strategic decisions (see Papadakis et al. 2010). Here, social network (which covers parts of the internal and external environment), decision topic (which covers part of the context aspect 'nature of the strategic decision'), and type of service organization (which covers part of the internal environment) were used. This leads us to conclude that the effect of the social network on decision making is pervasive, yet while the extent and direction is strongly dependent on the role of other aspects of the context that shape the formulation process and affect the relations between context, process, and outcomes.

The answer to the research question based on the studies is thus one that immediately points to additional research. The question of role and interplay of context aspects suggests that, just as in much other strategy and strategic management research, relationships are more nuanced than simple main effect

hypotheses of one variable on another. Reviews on studies that tested these direct effects show little support in favor of simple direct effects (Boyd, Haynes, Hitt, Bergh, & Ketchen, 2012; Dalton, Daily, Ellstrand, & Johnson, 1998). The inclusion of several antecedents and mediators in the empirical studies followed that vested wisdom, but did not arrive at definite answers regarding the role and interplay of antecedents, moderators and mediators in explaining the effects of social networks on decision making. Givens this state of affairs, the way forward in terms approaches is suggested along three lines, which will be discussed in Section 6.5. In the following sections, the subquestions will be discussed first.

6.1 Influence of social networks on decision nerve center (subquestion 'a')

It can be concluded that the social network affects the decision nerve center in a variety of ways. The citation analysis of the synthesizing literature shows that the most central papers (based on centrality measures from social network analysis) can be clustered into three sets of papers. The first set concerns papers that zoom in on observational and cognitive aspects of key decision makers. Interaction with other actors and the possible dynamic nature of these interactions were not explicitly conceptualized. However, key decision makers are implicitly assumed to be subject to the influence of inputs of other actors and to interpersonal or group dynamics playing a role in shaping interpretation and subsequent outcomes. The second set of papers focused on integrative frameworks and their constituent building blocks. These papers implicitly reserved a place for the interrelations of participants in the SDM process. The involvement of actors external to the organization is not explicitly recognized, and can thus not be found in these frameworks. It is kept implicit in other factors that affect SDM, such as degree of complexity. The third set of papers concerned the characterization of the ideal types of actor and process models. The actor and process model papers display shortcomings similar to the first two sets described above, although their aim is different from those papers. The tendency of the papers in this set is the move towards more realistic actor and process models, compared to the classic rational model. These papers do not claim to have found the simple solution, but rather contend that they have provided some conceptual relaxation, or relevant conceptual amplitude, necessary to map actors' behavior and the processual unfolding more realistically. They do not point explicitly to interrelations with other actors.

Taken together, this suggests that in conceptual terms for SDM research, the terrain with regard to the influence of actors and their relative part in the state of cognitions and other process elements is scantly researched. SDM research needs to build on developments and use of social network theories and analytical techniques in management and organization studies in general, and in specific adjacent areas that also have a high premium on intelligence and resources as explanation for outcomes, such as innovation studies and creativity studies (Leenders, Van Engelen, & Kratzer, 2003; Obstfeld, 2005; Sosa, 2011). The empirical studies in Chapter 3 and Chapter 4 discussed the effects of the activated social network on the key decision maker in terms of how evaluative judgments were affected. From those chapters, it can be concluded that the influence of the activated social network can be both negative as well as positive for the mental representation of the key decision maker. In other words, the implications of the social network for the decision nerve center are equivocal. These will be discussed next.

6.2 Influence of social networks on mental representation (subquestion 'b')

It can be concluded that social networks influence mental representations. The effects of social networks were researched, because it was expected that they would affect mental representations next to individual characteristics. This proved to be the case from the analyses in chapters 3 and 4, in which breadth of social capital (as the activated network in the decision situation) influenced the evaluative judgments of risk acceptance and confidence level. However, the results do not point in the same direction, meaning that social networks do not have an identical or even similar effect on the cognitive processing by the key decision maker. The influences found in the empirical research suggest that influence is equivocal. Not all aspects are affected in the same way. The activated social network can affect cognitive aspects differently in the same decision situation. The extent to which this influence is attributable to combinations of the presence of certain parties is not clear, but it may be the case that certain aspects of cognitive processing are more influenced by a specific party or set of parties due to characteristics of those parties, the type of relationship, or the dynamics in the relationship. As the models in chapters 3 and 4 were moderated by other aspects of context, namely type of service organization and decision topic

respectively, the effects may also be a consequence of that moderation. However, the precise workings of the parts of the activated social network and the context aspects for the different aspects of cognitive processing are left for future research. For example, it may be that members from the private social network boost confidence and the level of risk acceptance. This may not lead to an assessment of the decision situation that is favorable to decision outcomes, due to the boost being more based on social-emotional support rather than knowledge of the elements that are decisive in the decision situation faced by the decision maker. This combination of the structural aspects of the social network and the contents of relations is relevant to understand why differences between social networks matter for the mental representation.

6.3 Influence of social networks on decision outcomes (subquestion 'c')

It can be concluded that social networks influence decision outcomes through the mental representation of key decision makers. The discrepancy between the quality of decision outcomes and organizational outcomes was presented in order to stress the need to understand decision outcomes. By obtaining a more fine-grained view, it is possible to understand the relationship between inputs such as social capital, its effect on the mental representation of the decision maker, and on outcomes that are directly related to the mental representation. The activated social network was beneficial or detrimental for decision effectiveness through the evaluative judgments of the key decision makers. In the two studies that research the influence of social networks on decision outcomes, social capital was linked with decision effectiveness through evaluative judgments. The moderating effects of the context variables decision topic (part of the context factor nature of the strategic decision) and type of service organization (part of the context factor organizational context) showed that the context in which decision makers find themselves matters substantially for decision effectiveness.

Chapter 3 shows that if you are a 'producer services' SME, you are ultimately not likely to benefit from more intelligence and resources for your assessment of the decision situation from your activated social network. Decision effectiveness is affected negatively. If you are a 'distributive services' SME, you are ultimately likely to benefit somewhat from more inputs for your assessment of the decision situation from your activated social network. The results show that for 'consumer services' SMEs, no conclusions can be provided. Chapter 4 shows that if you take

a strategic decision that relies on external parties for its implementation, you ultimately benefit from more inputs for your assessment of the decision situation from your activated social network. For those decisions that rely on internal parties for their implementation, not all inputs are conducive for decision effectiveness. When including the individual characteristics on level of education and level of experience, the effects become even more clouded. In Chapter 4, the interplay between the antecedents and the moderator shows a complex picture of how the mental representation is affected by these and is translated into decision effectiveness.

In other words, decision topic and type of service organization were shown to affect the relationship between the aforementioned variables to such an extent that these need to be included in order to understand why organizational outcomes benefit or suffer from certain strategic decisions. Given that not each decision topic or each type of service organization was representatively sampled for their occurrence and existence in reality, caution regarding the conclusions and further research in this area is required. It does, however, confirm the push from Papadakis et al. (2010) to research the moderating effects of context variables in the SDM process in general, and specifically on the relationship between decision outcomes and organizational outcomes. From their review, which covers the 1997-2008 period and, moreover, the findings from the sets of core constructs analysis in Chapter 2, this can be concluded to be a terrain that is of interest for future research since not many studies have done this before.

6.4 Differences in accessing the social networks between decision makers (subquestion 'd')

It can be concluded that differences exist between decision makers regarding which part of their social network they access more. Chapter 5 indicates that differences exist based on individual characteristics, namely type of decision maker and need for cognition, and whether distal or proximal networks are accessed more for information search in the context of strategic decisions.

These individual characteristics appeared to drive the managerial and entrepreneurial decision maker to access different parts of their social network, although the respective characteristics were not steering information search in the same way. Entrepreneurial decision makers drew more on the private social network (proximal), whereas managerial decision makers drew more on the

organizational social network (distal). Neither showed differences in drawing on the external social network (distal). A higher need for cognition led to information search more in the organizational social network and the external social network. Levels of need for cognition do not lead to differences in accessing the private social network. The implication of this is that to understand the assessment of the decision situation, it is conducive to look at how the configuration of context factors enables the decision maker to acquire a more or less accurate mental representation to work within the decision situation. As Child (1972) already indicated, the distinction between reality and its evaluation is important because it can explain why organizational decision makers do not react to certain observable environmental changes. If that evaluation systematically contains blind spots due to not having access, or having late access, to certain information (due to missing links in your social networks), the decision situation may be wrongly assessed. Moreover, it indicates that the configuration of social ties may be decisively relevant for the decision outcomes. The research on the direct relationship between context and organizational outcomes in SDM research would then be a crude proxy of the influence of context on SDM, and its implications for the success of organizations. In their review, Papadakis et al. (2010) identified eight studies that researched these links (e.g. Covin, Slevin & Heeley, 2001; Goll & Rasheed, 2005; and Miller, 2008). Although these do not claim sole causality between context aspects and organizational outcomes as the way to understand the consequences of strategic decisions, they suggest that the context determines the consequences of SDM directly, whereas the studies in this dissertation show a more fine-grained picture:

1. Key decision makers are influenced by their social networks and individual characteristics (education, experience) regarding decision formulation;
2. The consequences of these influences for decision effectiveness are mixed, both positively and negatively;
3. Decision topic and type of service organization affect the relationship between social networks and decision effectiveness through decision formulation;
4. Decision topic affects the relationship between individual characteristics (education, experience) and decision effectiveness through decision formulation;

5. Individual characteristics of key decision makers (type of decision maker, need for cognition) affect which part of their social network is searched more.

The above suggests that social networks are important for decision makers, but that the context in which decision makers find themselves matters strongly. Decision makers who maintain a *one best way* of decision making for all decision problems are likely to have mixed results. It is important for decision makers to realize that interpretation is based on incomplete information and what constitutes good information to assess the decision situation varies from situation to situation. This is nothing new in SDM research. However, thinking about your sources of intelligence for the assessment of the decision situation helps decision makers organize the intelligence, leading to the identification of intelligence not yet received or irretrievable and to the role and weight of the intelligence that is present. With regard to the latter, it may be good to know that information about the behavior of competitors comes from an industry association or a disgruntled employee of the competitor. With regard to the former, it may be useful to know that some of your traditionally most vocal trustworthy employees are keeping quiet about a new product launch decision. What is the value of such information or the lack of it? By identifying the parties that did or did not provide intelligence or resources, gaps in these, and their value, can be recognized and an estimate can be made whether this poses problems or delivers solutions. Although most decision makers in SMEs or large organizations do not take decisions single-handedly, their decision authority may lead them to pursue their interpretation of the decision situation. Future research will need to show how much and in what way the 'little help from their friends' that decision makers get, wanted and unwanted, helps or obstructs them in reaching desired outcomes. For decision makers to make informed decisions that lead to desirable outcomes, it is imperative for them to not only judge the intelligence and resources received, but also where they came from and whether they can estimate the role and weight of present *and* absent intelligence and resources given the context of the decision situation they face. It is this complementarity that can benefit the scholarly study and practical application of SDM to identify ways to reach better decisions and better decision outcomes by combining the cognitive approach with the social network approach.

6.5 Ideas for future research

The conclusions in the previous sections provide a basis for future work in SDM. The exact division of labor within the set of context factors and within the set of individual characteristics as antecedents or moderators on the relationships in SDM is not clear. In other words, how can one identify the role of a factor or characteristic in shaping the formulation process, its subsequent outcomes, or how it affects the relationships in the model?

In terms of an approach in the future, three lines are suggested. The first line would be to expand the number of variables to capture the complexity on all aspects of strategic decisions. However, the simple expansion of the number of variables would lead to a messier picture with increased chances of becoming unwieldy for scholars and practitioners alike. The second line would be to work with configurational or gestalt approaches (Boyd et al., 2012; Dess, Newport, & Rasheed, 1993; Miller, 1986, 1987). Configurational approaches do not suffer from the unwieldiness of the first line suggested here, because they cluster constructs in coherent sets. In the literature it is suggested that these approaches lack the ability to deal with groupings that are not based on a 'fit' approach with regard to the multidimensionality and interdependencies of configurations (Short, Payne, & Ketchen Jr., 2008). In other words, they are less apt to deal with configurations that would allow for exchangeable peripheral components of the typology, which are not core to the causal relationship between the type and outcome studied (Fiss, 2011). Put simply, configurational approaches tend to treat all elements as essential, but different combinations of aspects might be equally productive for outcomes, here decision outcomes (remember that not every top management team member needs to be involved in each and every decision the team takes in order to have the team function and be 'productive'). The third line would be to work with set-theoretic approaches and qualitative comparative analysis (Fiss, 2007, 2011; Greckhamer, Misangyi, Elms, & Lacey, 2008). These allow for neutral permutations, referring to the notion that "…within a given typology, more than one constellation of different peripheral causes may surround the core causal condition, with these permutations of peripheral elements being equally effective regarding performance" (Fiss, 2011, p. 394).

Given the mixed results for the effects of social networks, all lines appear to have some merit. All three lines require data on many aspects of SDM, preferably on many organizations or many decisions per organization. The first line allows

for testing which constructs should be a part of the multivariate set of variables. Which aspects of context, decision formulation (here considered as mental representation) and outcomes should be included? The second line allows for the identification of important links between constructs in the typology. For example, in an industry such as the software industry, software engineers are more important than other personnel. Hence, finding out 'hard' compositional constellations for innovative performance allows for a more specific understanding of different relations with the outcome of interest. The third line allows for a search of the core causal conditions and exchangeable peripheral causal conditions. For example, if knowledge about a competitor's next move is required in order to decide whether a strategic alliance should be started with a third party, the source (whether it is a middle manager or a top manager) is less relevant than the intelligence. Network compositional issues as described with the second line become less relevant due to the exchangeability of the structural relationship, because the content is more important than the functional position of the source (assuming the intelligence is equally truthful and reliable, and that it reaches the key decision maker at an identical rate).

Next to the necessary identification of the systematic behind the 'it depends' future research indicated above, two other avenues also present themselves. These concern (1) future research on the relationship between decision outcomes and organizational performance, and (2) the relationship between the social network and decision situation assessment. These are presented below.

6.5.1 The relationship between decision outcomes and organizational performance

From Baron and Hershey's (1988) point of view, outcome knowledge is not always the most suitable basis to evaluate decisions and their process outcomes. In addition to the possibility of moderating or intervening variables found in the empirical studies in this dissertation, they point to possible effects of using outcome knowledge as evaluation criterion for determining inputs in subsequent rounds of everyday decisions (Baron & Hershey, 1988) and strategic decisions (Hutzschenreuter & Kleindienst, 2006; Narayanan et al., 2011; Rajagopalan et al., 1993). This indicates a possible source for inconsistencies in decisions taken in apparently similar decision situations, whether there is a repeated decision for one decision maker or a unique decision for a different decision maker. Moreover, not each and every decision is taken to contribute to organizational performance,

rendering the judgment of a decision based on organizational performance mute in some cases.

The recognition of different evaluation bases and the possible consequences for other decisions helps build an understanding as to why decision makers and organizations adapt or are persistent in their strategic routines, approaches and choice (Haleblian & Rajagopalan, 2005; Milliken & Lant, 1991). If decisions are judged based on organizational performance, this may lead to false attribution of appreciation to actor and process features in a previous decision situation. It may even lead to the installment of routines that have negative consequences for subsequent decision outcomes. Zooming in on the embeddedness of key decision makers can uncover inertia in the delivery of intelligence and resources to the key decision maker. Given that some relations are stable and continuous, other relations are formed ad hoc. In the activated social network, there may be core members who are involved in all or several strategic decisions, leading to the question of whether and to what extent a stable core is beneficial for decision outcomes and organizational performance. On the one hand, this could mean recycling the same views and intelligence over and over, causing blind spots to occur. On the other hand, this may provide a unitary approach which increases the level of stability and maintains the direction of the organization. Zooming in on the embeddedness of the key decision maker can also uncover the other side of the coin, why some key decision makers seem to decide in a very volatile manner. Future research can take into account a richer and dynamic perspective based on the social network approach to establish how key decision makers are influenced by their embeddedness in taking decisions that lead to beneficial or detrimental outcomes. Moreover, this may uncover sources for why decisions contribute to organizational performance or not.

The decision maker's viewpoint is particularly important when establishing the relationship between decision outcomes and organizational performance. Not all decisions taken serve the role of benefiting organizational performance. Huff and Reger (1987) describe this as the danger of considering decisions in isolation, making them appear biased. However, these decisions may have their own rationality in a larger strategic framework. This presents the need to be cautious when interpreting the full consequences of one decision and tying it to judgments about what the participants in the process have been doing and how social networks influenced the decision.

In sum, the above suggests that in order to develop an understanding of the relationship between decision outcomes and organizational performance, the effects of their antecedents and the moderating effect of context aspects need to be explored in empirical research. The moderating effects of context variables found in the empirical studies in this dissertation on the relationship between other aspects of context on the decision process with decision outcomes provide the empirically grounded basis to further explore their role in other areas of the integrative framework of strategic decisions However, based on the above, interest in decision outcomes, in their own right, is also a point of worthy attention, given the possibly undesired effects of the use of outcome knowledge to judge decisions. Research in organizational settings is not abundant with regard to strategic decision outcomes, leading to the contention that this is an interesting research direction to pursue.

6.5.2 The relationship between the social network and decision situation assessment

The review by Papadakis et al. (2010) does not identify papers that deal with the link between social networks and decision situation assessment in the time frame under review. Although many papers identified in the citation analysis implicitly assume one next to the other, they are not explicitly modeled in papers. Research in terms of the assessment of the decision situation needs to be developed next to the more established approach focusing on the dimensions of the formulation process, such as rationality, intuition and political behavior, to understand why decisions turn out the way they do. In this dissertation, the empirical studies zoomed in on how decision makers' evaluations of the decision situation mediate the relationship between social capital and decision effectiveness, and how decision makers search the social networks in which they are embedded for information. These mostly individual level characteristics only limitedly harbor collective characteristics. Research on top management teams indicates potential beneficial forms of diversity (e.g. demographic and cognitive (Carpenter et al., 2004; Olson, Bao, & Parayitam, 2007a; Papadakis, 2006) and types of diversity (e.g. separation, disparity and variety, see Harrison & Klein, 2007) for problems that are complex and that have a high degree of uncertainty. In the context of this dissertation, this concerns the decision situation. However, this research works only limitedly with the aspects indicated by Roberto (2003) and Cannella and Jones (2011), who indicated that top management teams do not equally use their

members for each and every problem in terms of participation, contributions, decision formulation and the actual decision. So, except for the way of formulation (degrees of rationality/comprehensiveness, intuition, political behavior) and the composition of the participants (diversity, participation, involvement), the representation that serves to bestow order on the world surrounding the decision makers and framing the decision is only limitedly represented and researched as a combination of these two (cf. Levinthal, 2011 and Nutt, 1998). Whether this should be an individual or collective level of mental representation can be made contingent on the unit of observation.

The next step in SDM research is aimed at determining how individuals contribute to the assessment. The composition of the social network upon which is drawn for the decision provides the basis to uncover why structural presence enhances decision situation assessment, or hampers it. The collective here needs to be understood in the vein of Roberto (2003), consisting of individuals that are structurally tied together and that participate in the core processes that concern or develop the collective, such as crisis management and SDM. Not all individuals will participate in each and every instance of such processes, as Roberto (2003) shows. Furthermore, the contribution of an individual is not necessarily comparable to other individuals in terms of the intensity of the contribution. Additionally, individuals may have different intensities of contribution in consecutive rounds of repeated SDM processes. Hence, employing a social network approach to understand how decision situations are assessed leads to understanding more comprehensively why different decisions are taken, even if circumstances appear similar due to the presence of the same people in the activated social network. By incorporating the content and intensity of contributions (e.g., by type of resource and tie strength), it may become apparent why the decision assessments turn out differently for structurally equivalent activated social networks. The effects on the mental representation can be understood more in detail.

The boundaries of the collectives referred to here are permeable, not hard or fixed. This means that, as research in this dissertation shows, non-organizational individuals can be involved in the process of the organization. The composition of the social network influencing the decision nerve center can thus expand or contract. Repeated decisions provide key decision makers with the possibility to identify those individuals from their social networks who contributed positively or negatively in earlier instances of decisions, and can involve or block them more

effectively if these can be identified (see Chapter 5 on the consideration set). However, not all individuals can be selected by the key decision maker. Some individuals need to be included due to formal relations, such as hierarchical or contractual relations.

An important question to consider is whether the assessment of the decision situation should be limited to the key decision maker rather than shared decision making. In organizations, it is the one with the decision authority that takes decisions, and not necessarily the individual who can provide the highest decision accuracy (although they may coincide). If the decision situation concerns the assessment of a repeated decision, then the individual with the decision authority should arguably not only leverage the information from the social network, but also come to shared interpretation. The reason why repeated decisions may be best off drawing on the aggregated information of the collective rather than the individual can be found in the explanation that information and knowledge about how to handle the decision in terms of action-outcome links and cause-effect relationships is present in the collective to a larger extent than it is for single-shot decisions. In the latter, the key decision maker is the one who can weigh the contributions and integrate them to form an assessment of the decision situation. The members of the activated social network deal with a novel situation, which may lead them to propose incorrect claims based on analogies (Farjoun, 2008; Gavetti et al., 2005; Gavetti, Levinthal, & Rivkin, 2008), gap filling (when information is missing) and information distortion (when information is ambiguous) occur (Dutton & Jackson, 1987), and filters muddle signals and information (Hambrick & Mason, 1984). With the former, some evidence-based knowledge is readily available.

The complexity and uncertainty of strategic decisions are not necessarily sufficiently harnessed by the focus on the individual for single-shot decisions and by the focus on the collective for repeated decisions. The decision made by the individual or individuals who have decision authority is unlikely to be evident to such a degree that the order bestowed on the outside world through the individual or collective knowledge representation points to a single option as the most logical choice. Acknowledging that there may be situations that provide such a logical choice, most of the strategic decisions are not that obvious. Therefore, social networks in which individual actors with decision authority function ideally need to provide the mental representation of the decision situation in such a way that it is rich enough in terms of relevant elements and

their interrelationships. This then results in action-outcome linkages being identified with a relatively high degree of certainty, and cause-effect relationships being estimated in terms of the magnitude of the effects. However, there is a limit to the richness of the representation, as fine-graininess can have a downside point in leading to long throughput times and emphasizing and exaggerating details that are not decisive. Balancing the individual or group cognitive complexity, which is the capacity to reflect the decision situation from multiple and complementary perspectives (Iederan et al., 2009), with the complexity of the decision situation should allow the individuals who carry decision authority to produce accurate decisions. How this works in combination in different settings and fluid composition of collectivities is an interesting avenue for future research.

In conclusion, this dissertation combines a cognitive approach with a social network approach to SDM in an attempt to explore the ways in which information gathered through social network ties is incorporated into the SDM process. The agenda for future research points to the direction of teasing out dynamic compositional issues, as well as more advanced emergent cognitive states to find out why decisions turn out the way they do. Furthermore, the decision outcome and organizational performance connection requires the disentanglement of the purpose of a decision from the outcomes it is not supposed to be related to, before being judged. Taken together, SDM research appears to be in need of designs that capture more fully the combinatorial aspects of the integrative framework on a more fine-grained conceptual level. If a key decision maker were to ask whether he or she should enlist the help of his/her friends for strategic decisions, we can say a wholehearted yes. However, we must not forget that enriching the mental representation is only one part of the deal. Key decision makers should be wary of appeasing results that bear no grounding.

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SAMENVATTING (IN DUTCH)

In deze dissertatie wordt de relatie tussen besluitnemers en andere partijen in het strategisch besluitvormingsproces onderzocht. Hiermee wordt de verbinding gelegd tussen de bronnen van informatie en hun invloed in beslissingen. Hierbij worden ook de mechanismen achterhaald hoe inputs van bronnen worden omgezet in beslissingen. Deze relaties en mechanismen zijn onderzocht aan de hand van een analyse van de strategische besluitvormingsliteratuur, en aan de hand van drie empirische studies. Daarbij is gekozen voor een combinatie van twee benaderingen: de cognitieve benadering (zie onder andere Narayanan et al. 2011) en de sociale netwerkbenadering (zie onder andere Arendt et al. 2005) van strategische besluitvorming. De cognitieve benadering is gekoppeld aan het interpretatieve perspectief in besluitvormingsstudies. Dit perspectief gaat uit van de causale invloeden die cognitieve processen en structuren van besluitnemers hebben op strategische beslissingen. De sociale netwerkbenadering is gekoppeld aan het adaptieve perspectief in besluitvormingsstudies en gaat uit van de causale invloeden die het systeem van relaties tussen besluitnemers en andere partijen heeft op strategische beslissingen. Deze partijen stellen de besluitnemer in staat de informatie te ontvangen die hij/zij moet verwerken om tot een besluit te komen. In tegenstelling tot eerder onderzoek is gekozen deze twee benaderingen complementair in te zetten, waar eerder onderzoek deze benaderigen als concurrerend behandelt. Dit leidt tot de eerdergenoemde verbinding van de bronnen (sociale netwerken) met de mechanismen (cognitie), maar geeft tevens inzicht in hoe de partijen die betrokken worden bij beslissingen, invloed uitoefenen.

Vanuit de gedragsmatige theorie van strategie (onder andere Powell et al. 2011) wordt de relatie tussen cognitie en sociale interactie een centrale rol toegedicht. Deze rol heeft betrekking op de relatie tussen de centrale strategen van een organisatie en de partijen die de strategie ten uitvoer moeten brengen, alsmede de partijen die de strategie op haar legitimiteit moeten beoordelen. Gavetti (2012) veronderstelt dat de centrale strateeg zicht heeft op hoe hij beide partijen weet te mobiliseren om de organisatie buitengewone prestaties te laten leveren en competitief voordeel te laten behalen. In deze dissertatie wordt de invloed van andere partijen op de verwerking van informatie door de besluitvormer onderzocht, maar wordt geen onderscheid gemaakt tussen de twee specifieke partijen die Gavetti veronderstelt. Hierdoor wordt duidelijk hoe de inbreng van deze partijen vooraf meeweegt. Immers, rollen in het besluitvormingsproces zijn niet per definitie gelijk aan de rollen nadat de beslissing genomen is. De overkoepelende vraag die als uitgangspunt dient is:

'Wat is de invloed van sociale netwerken op strategische besluitvorming?'

De resultaten uit de literatuuranalyse (Hoofdstuk 2) laten zien dat er op conceptueel gebied relatief weinig bekend is over de effecten van sociale netwerken op strategische

besluitvorming. Er is onderzoek gedaan naar de relatie tussen sociale netwerken en de prestatie van organisaties, maar vrijwel niet naar de effecten van sociale netwerken op de effectiviteit van strategische beslissingen. Het empirisch onderzoek in deze dissertatie laat zien dat de bronnen van informatie (sociale netwerken) de effectiviteit van strategische beslissingen beïnvloeden door de informatieverwerking door de besluitnemer. Uit de empirische hoofdstukken 3 en 4 blijkt dat het effect van sociale netwerken niet eenduidig is. In Hoofdstuk 3 is gekeken naar de rol van sociale netwerken. Het type service organisatie speelt een modererende rol. Beslissingen in dienstverlenende sectoren die worden gekenmerkt door een middelmatige tot hoge afhankelijkheid van kennisbronnen bij de totstandkoming van diensten en waarbij de dienst wordt verstrekt aan een eindverbruiker hebben geen baat bij de invloeden van veel andere partijen bij de beeldvorming van de besluitvormingssituatie. De effecten daarvan die via de informatieverwerking door de besluitnemer verlopen, zijn niet positief voor de effectiviteit van strategische beslissingen. In Hoofdstuk 4 is gekeken naar de rol van sociale netwerken (in de vorm van sociaal kapitaal) en naar menselijk kapitaal (opleiding en ervaring). Het onderwerp van het besluit speelt in dat hoofdstuk een modererende rol. Het onderwerp van besluit is een sterke indicatie van wie de betrokkenen zijn bij de uitvoering van het besluit. Indien voor de implementatie met name gebruik gemaakt moet worden van externe partijen, dan heeft de betrokkenheid van veel andere partijen bij de beeldvorming van de besluitvormingssituatie een positief effect op de effectiviteit van strategische beslissingen. De partijen die een bijdrage leveren aan de beeldvorming zijn niet per definitie de externe partijen die betrokken zijn bij de implementatie. De condities die met behulp van de moderatoren in kaart gebracht zijn, geven aan wanneer een grotere bemoeienis vanuit het netwerk dat de besluitnemer omringt productief is en wanneer niet. Daarnaast werd in Hoofdstuk 5 onderzocht waar besluitnemers hun informatie vandaan halen, en wat hen daartoe drijft. Er blijken verschillen te bestaan tussen besluitnemers die manager zijn bij een grote organisatie, en besluitnemers die als ondernemer bij een kleine of middelmatig grote organisatie beslissingen nemen. Managers zoeken meer dan ondernemers in hun netwerken *binnen* hun organisatie. Ondernemers zoeken meer dan managers in hun *persoonlijke* netwerken. Verschillen bestaan tussen besluitnemers die een grote behoefte hebben om informatie tot hun beschikking te hebben en te analyseren tegenover besluitnemers die daar een kleine behoefte aan hebben. Besluitnemers met een grote behoefte naar informatie zoeken in netwerken die verder van hen afliggen, specifiek het netwerk binnen de organisatie en het externe professsionele netwerk. Er is geen verschil voor het privénetwerk.

Bovenstaande geeft aan dat het strategische besluitvormingsproces niet enkel als een interne en vastgeslagen procedure beschouwd kan worden. De invloeden van sociale netwerken van buiten en binnen de organisatie, evenals het inspelen op de relevante condities geven aan dat hedendaagse besluitnemers hun beslissingen niet in afzondering en enkel op basis van hun eigen wereldbeeld kunnen nemen.

SUMMARY

In this dissertation the relation between decision makers and other actors in the strategic decision-making process has been researched. The connection is forged between the sources of information and influence on the one hand, and the mechanisms that transform these inputs into decisions on the other hand. The above has been researched by analyzing the strategic decision-making literature and by conducting three empirical studies. The research combines two approaches, namely the cognitive approach (e.g. Narayanan et al. 2011) and the social network approach (e.g. Arendt et al. 2005) to strategic decision making. The latter, geared to the adaptive perspective in strategic decision making, studies decision making by attributing causal significance to the system of relations that affects decisions. It provides the channels through which the information reaches the decision maker. The former, geared to the interpretative perspective in strategic decision making, studies decision making by attributing causal significance to the cognitive structures and processes of key decision makers. It provides the cognitive structure required to process the information. In contrast to previous research, a complementary approach based on these approaches was chosen. This leads to the connection between the sources (social networks) and the mechanisms (cognition), but also provides insight in how actors that are involved influence decision making.

The connection between cognition and social interaction is of key importance following the behavioral theory of strategy (e.g. Powell et al. 2011). The connection can be found in the relation between the key strategists of an organization and the actors that have to implement the strategy, as well as the actors that have to judge the strategy in terms of legitimacy. Gavetti (2012) assumes that the key strategist has knowledge on how both parties can be mobilized to achieve superior performance and competitive advantage. In this dissertation, the influence of other actors on information processing by the decision maker is researched. The distinction between the actors as suggested by Gavetti is not taken on board. The approach followed here will provide insight in how a variety of actors affect the decision making process. After all, their roles may be very different after the decision has been taken compared to their role in the formulation process. The overarching research question is:

'What is the influence of social networks on strategic decision making?'

The results from the literature review (Chapter 2) show that conceptually little is known about the effects of social networks on strategic decision making. Research has been done on the relation between social networks and types of organizational performance, but there has hardly been scholarly interest in the effects on the effectiveness of strategic decisions. The empirical research shows that sources of information (social networks) affect the effectiveness of strategic decision through the decision maker's information

processing. The empirical chapters 3 and 4 show that the effects of social networks are equivocal. In Chapter 3, specific attention was given to the role of social networks. The type of service organization has a moderating effect. The results show that when strategic decisions are taken in service sectors that are characterized by a medium to high dependence on knowledge-based resources for the production of the service and mode of service delivery is to the final user, here the 'producer services', the decision support of a higher variety of actors does not help the accurate assessment of the decision situation to achieve higher decision effectiveness. In Chapter 4, attention to social networks (as social capital) and attention to human capital (education and experience) was given. The decision topic has a moderating effect. These moderating effects show that conditioning effects are a decisive factor in taking decisions that help you achieve your goals. The topic of a decision provides a strong indication which parties will be involved in executing the decision. If the implementation predominantly requires external parties, then the involvement of a high variety of other actors for the assessment of the decision situation benefits the effectiveness of strategic decisions. The actors that contribute to the assessment of the decision situation are not necessarily the ones that are involved in the implementation of the decision. Chapter 5 presents research that investigates the drivers for information search for strategic decision makers. It reveals differences between managers of large organizations and entrepreneurs of small and medium-sized organizations. Compared to entrepreneurs, managers search information more in their intra-organizational networks. Compared to managers, entrepreneurs make more use of their private networks to search for information. Differences were also encountered between decision makers that have a high need to have information available and analyze information in comparison with decision makers that have a low need for such availability and analysis. Decision makers with a high need search in networks that are distal, specifically the intra-organizational network and the external professional network. There is no difference for the private network.

The above suggests that the strategic decision-making process cannot be conceived as an internal formalized procedure. The influences of social networks from outside and inside organizations, as well as the adaptation to the relevant conditions clearly indicate that contemporary decision makers cannot take their decisions in isolation and cannot base these on their own worldview.

DANKWOORD (IN DUTCH)

Normaal gesproken ben ik niet van de one-liners. Mij wordt eerder verweten te lange en vooral te complexe zinnen te gebruiken. Toch is er een one-liner die me afgelopen jaar regelmatig is voorgehouden, in diverse vormen. De meest bondige formulering was die van mijn promotor, Jac Geurts: "Er zijn maar twee soorten proefschriften, affe en onaffe!". Ik vroeg me dan altijd af wat een 'af' proefschrift was? Hoe je dat nu kon zien? Welnu, blijkbaar ligt het er, met een hele rij ideeën nog in het vooruitzicht.

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Tilburg, maart 2013
Rob Jansen

BIOGRAPHY

Rob Jansen studied Policy & Organization Studies at Tilburg University. He works as a lecturer in the Department of Organization Studies at Tilburg University since 2002. He researches a variety of topics in the strategic decision-making field. Some examples are cognitive and network approaches to strategic decision making, the role of email use, decision rules, management team decision making, rationality in groups and cognitive complexity. Additionally, his research aims to understand the causes and consequences of inter-organizational collaboration and inter-organizational tie dissolution.

Key publications (chronological order):

Jansen, R. J. G., Curşeu, P. L., Vermeulen, P. A. M., Geurts, J. L. A., & Gibcus, P. 2013. Information processing and strategic decision-making in small and medium-sized enterprises: The role of human and social capital in attaining decision effectiveness. *International Small Business Journal*, 31 (2): 192–216.

Curşeu, P. L., Jansen, R. J. G., & Chappin, M. M. H. 2013. Decision Rules and Group Rationality: Cognitive Gain or Standstill? *PLoS ONE*, 8(2): e56454.

Jansen, R. J. G., Curşeu, P. L., Vermeulen, P. A. M., Geurts, J. L. A., & Gibcus, P. 2011. Social capital as a decision aid in strategic decision-making in service organizations. *Management Decision*, 49(5): 734–747.

Gössling, T., Oerlemans, L., & Jansen, R. 2007. *Inside Networks: A Process View on Multi-organisational Partnerships, Alliances and Networks*.Cheltenham: Edward Elgar.

APPENDIX A: METHODOLOGICAL APPENDIX TO CHAPTER 2

This methodological appendix describes the steps that were taken in order to produce the figures in Chapter 2 with regard to the citation analysis (Figures 2.1 to 2.4 and A.1).
The citation network is constructed out of an adjacency matrix with the Visone visualization software (Brandes & Wagner, 2004), version 2.6.4
The data for the adjacency matrix was acquired as follows:

1. The electronic version of the Social Sciences Citation Index, accessed through the Thomson Reuters website (http://www.webofknowledge.com), was searched for all its years (1956- 2011) with the following search string:

   TI=(strategic decision making) OR TS=(strategic decision making)

   This search string sought to identify those studies that covered the main topic of this research, namely strategic decision making.

2. By limiting the search string to the Web of Science Categories 'Business' and 'Management' those studies were isolated that cover the topic in the light of (decision makers in) organizations.

   By limiting the search string to a set of journals that is considered central to the field and topic within these topic areas, initially those review and conceptual papers on strategic decision making were isolated that were considered common knowledge within the field of strategic decision making and rest solely on fundamental academic research. The list of journals is displayed in the table below (please note that name changes of journals are not noted separately in table A.1 below). The initial search string, after applying the above-mentioned restrictions, yielded 733 papers.

Table A.1List of journal titles initially searched

Journal titles	
Academy of Management Annals	Journal of Organizational Behavior
Academy of Management Journal	Journal of Small Business Management
Academy of Management Review	Management and Organization Review
Academy of Management Perspectives	Management Decision
Administrative Science Quarterly	Management Science
British Journal of Management	Organization Science
Entrepreneurship, Theory and Practice	Organization Studies
Group & Organization Management	Organizational Behavior and Human Decision Processes
Human Relations	Organizational Research Methods
International Journal of Management Reviews	Research in Organizational Behavior
International Small Business Journal	Small Business Economics
Journal of Business Venturing	Strategic Entrepreneurship Journal
Journal of International Business Studies	Strategic Management Journal
Journal of Management	Strategic Organization
Journal of Management Studies	

3. After correcting for empirical studies, the number of studies initially numbered 51 papers.

   The initial set of 51 papers was considered the first group of papers to be found. Recognizing the practical limitations of the Social Sciences Citation Index (not all journals are incorporated from their beginning) and the limited coverage of the employed search string (alternative wording of titles and keywords and creative titles may cover the topic, but not use the terms from the search string), the initial set of 51 papers was used to snowball back and forth with all these 51 studies. This yielded an additional 108 studies, providing a total of 159 papers (and thus nodes) for the figure. Forward snowballing was limited until 2011.

4. The 159 papers were entered manually into the adjacency matrix and scored with a '0' if there was no citation and with a '1' if there was a citation towards the other paper. The sample table A.2 below represents a part of the adjacency matrix:

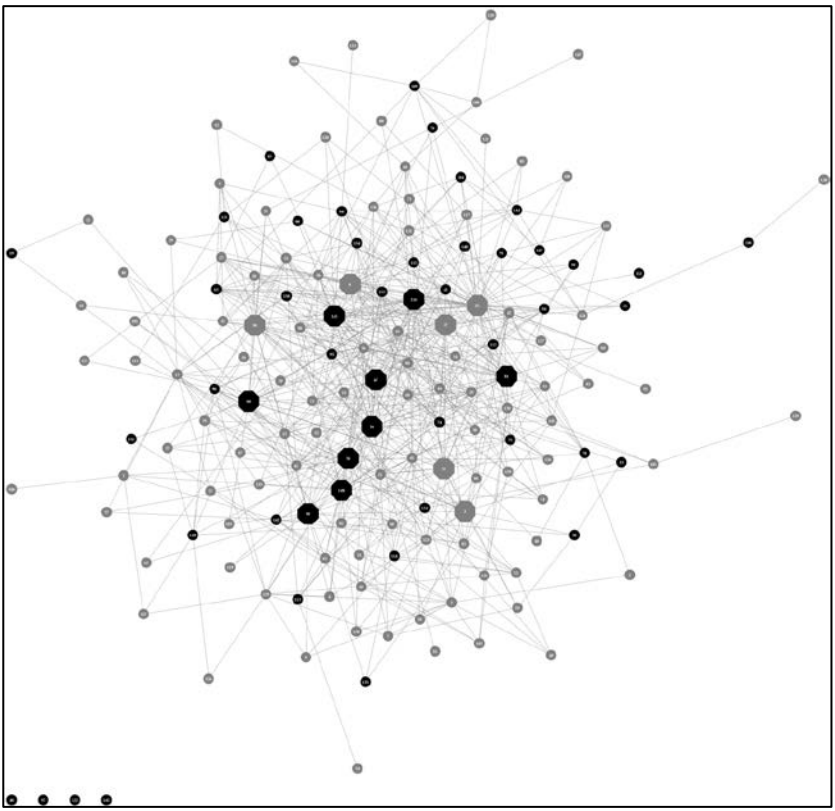
Table A.2 Abbreviated sample of used adjacency matrix

	Simon (1955)	Child (1972)	Hambrick & Mason (1984)	Narayanan, Zane & Kemmerer (2011)
Simon (1955)	0	0	0	0
Child (1972)	0	0	1	1
Hambrick & Mason (1984)	0	1	0	1
Narayanan, Zane & Kemmerer (2011)	0	1	1	0

The manual approach was preferred to the traditional automated generation of the citation network through (commercial) existing databases. The preference stems from the reliance of these databases on primary author association (Smith, 1981; Zhao & Strotmann, 2008)**.** Furthermore, the aim was to include both forthcoming and working paper counts, which are technically indexed differently from the published paper.

The matrix was filled symmetrically in order to provide the author with the opportunity to provide simple checks about the correspondence of zeros and ones in the cells. Furthermore, this strategy allowed the inclusion of forthcoming and same-title working paper versions. Hence, these close-to-finished types of papers were included, because their intellectual contribution to the work of the citing papers had materialized. Reprints of the same paper in later books or journal issues that were cited were collapsed in order to prevent the unnecessary thinning of the cited works. Note that the implication of this is that the citation network became undirected. This led to Figure A.1 below.

Figure A.1 *Citation network of synthesizing papers in strategic decision making*



The nodes of the citation network are the papers identified by the search process described above. The links represent the citations, i.e. the link between two nodes indicates that one paper cites the other, ultimately linking the nodes. The links are undirected, meaning that they do not take into account the direction of the citation. The total number of links a node has is the sum of the number of citations the paper that is represented by that node makes to other works in its reference list, and the number of citations the paper has received by other nodes. Citations made and citations received are only counted when these are to other papers within the set. This procedure allows for the capture of the part of the SDM field

that is contained in a paper, illustrating its encapsulated intellectual community compared to the other papers.

The number of each node serves as an identifier and corresponds to the number in Table A.1. The paper that is represented by the node can be looked up by checking the corresponding number. The black nodes represent the papers that were found initially by using the search string "strategic decision making" in the title or topic field in the Social Sciences Citation Index. The grey nodes represent the papers that were found by backward or forward snowballing. The citation network in Figure A.1 shows four isolate black nodes, papers that were identified with the search string but not citing or being cited by any other paper. The enlarged nodes are the nodes that came out of the centrality analyses as the most central papers (eigenvector, betweenness, closeness and degree). See Table A.1 for the scores for each paper in the set, and Table 2.1 for the top ten scoring papers on these measures.

The citation network serves to provide a network of relatedness of literature reviews by using simple network measures to find the catalyst papers for the field. Although this approach does not rule out ceremonial citations, it does distinctly recognize the place of the papers in the field as cited by other papers. The built network does not serve to provide an evaluation of the performance of authors, papers or the intellectual structure of the field; hence there is no need to exclude self-citations and negative citations. Self-citations are not necessarily problematic in citation analyses: "Since scientists tend to build on their own work, and the work of collaborators, a high self-citation count, more often than not, indicates nothing more ominous than a narrow specialty" (Garfield, 1979, p. 362). Furthermore, the interest here lies in the topic rather than the authors or specific papers, hence there was no set author list or paper list to start from as is common in many citation and co-citation analyses (cf. White & Griffith, 1981; and Grégoire, Noël, Déry & Béchard, 2006). Negative citations are also considered unproblematic. If anything, exchanging and having critique between and on review and conceptual papers shows the normal progress within a field of studies. Extending, invalidating and building on earlier claims comes with the critical assessment of the work done by your peers before you. As citation counts are a measure of contribution to a field (Garfield, 1979), authors and works that are negatively cited constitute as much a part of the field as positive citations.

Table A.3 Node code table with eigenvector, betweenness, closeness, and degree centrality (percentages)

Node	Paper	Eigenvector centrality (%)	Betweenness centrality (%)	Closeness centrality (%)	Degree centrality (%)
1	Edwards (1954)	0,202	0,971	0,594	0,465
2	Simon (1955)	0,641	1,210	0,701	1,008
3	Lindblom (1959)	1,178	2,271	0,747	1,705
4	March (1962)	0,353	0,025	0,635	0,388
5	Ference (1970)	0,079	0,023	0,540	0,155
6	Child (1972)	2,038	3,147	0,787	2,248
7	Nutt (1976)	0,297	0,151	0,623	0,465
8	Simon (1978)	0,225	0,040	0,593	0,310
9	Ansoff (1980)	0,608	0,031	0,628	0,465
10	Mitroff & Mason (1980)	0,213	0,451	0,581	0,233
11	Feldman & March (1981)	0,484	0,165	0,651	0,543
12	Robey & Taggart (1981)	0,084	0,013	0,529	0,155
13	Staw (1981)	0,899	1,403	0,676	1,085
14	Ungson et al. (1981)	0,583	0,100	0,637	0,465
15	Astley et al. (1982)	0,210	0,034	0,590	0,233
16	Brunsson (1982)	0,436	0,265	0,658	0,465
17	Narayanan & Fahey (1982)	0,932	0,632	0,674	0,930
18	Schoemaker (1982)	0,215	0,089	0,615	0,388
19	Schwenk (1982)	0,023	0,005	0,452	0,155
20	Dutton et al. (1983)	1,477	0,277	0,707	1,085
21	Fredrickson (1983)	1,097	0,538	0,725	1,008
22	Schwenk & Thomas (1983)	0,626	0,134	0,664	0,543

Node	Paper	Eigenvector centrality (%)	Betweenness centrality (%)	Closeness centrality (%)	Degree centrality (%)
23	Barnes (1984)	1,013	0,744	0,719	0,930
24	Grandori (1984)	0,239	0,030	0,581	0,310
25	Hambrick & Mason (1984)	3,319	12,971	0,925	4,031
26	Schwenk (1984)	2,917	4,569	0,856	2,636
27	Thomas (1984)	0,393	0,094	0,621	0,388
28	Duhaime & Schwenk (1985)	1,376	0,496	0,729	1,163
29	Ford (1985)	0,234	0,052	0,590	0,233
30	Hrebiniak & Joyce (1985)	0,390	0,093	0,622	0,465
31	Schwenk (1985)	0,386	0,127	0,629	0,388
32	Fredrickson (1986)	1,095	0,557	0,735	0,930
33	Schwenk (1986)	1,148	0,616	0,705	1,008
34	Walsh &Fahey (1986)	0,668	0,072	0,645	0,543
35	Dutton & Duncan (1987a)	0,732	0,089	0,664	0,543
36	Dutton & Duncan (1987b)	1,550	0,824	0,751	1,240
37	Dutton & Jackson (1987)	2,559	1,851	0,819	2,093
38	Hickson (1987)	0,220	0,040	0,582	0,310
39	Huff & Reger (1987)	1,793	2,785	0,835	1,705
40	Lang et al.(1987)	1	0,000	0,000	0,000
41	March & Shapira (1987)	0,486	1,171	0,658	1,008
42	Lyles & Thomas (1988)	1,401	0,980	0,783	1,008
43	Schwenk (1988b)	1,677	0,784	0,773	1,240
44	Whittington (1988)	0,367	0,324	0,622	0,465
45	Provan (1989)	0,179	0,000	0,554	0,155

Node	Paper	Eigenvector centrality (%)	Betweenness centrality (%)	Closeness centrality (%)	Degree centrality (%)
46	Schwenk (1989)	0,154	0,010	0,552	0,155
47	Wooldridge & Floyd (1989)	0,895	0,508	0,694	1,085
48	Brunsson (1990)	0,126	0,000	0,538	0,233
49	Butler (1990)	0,077	0,000	0,505	0,310
50	Mintzberg & Waters (1990)	0,190	0,071	0,552	0,543
51	Pettigrew (1990)	0,133	0,014	0,531	0,388
52	Schwenk (1990)	0,131	0,292	0,567	0,155
53	Milliken& Vollrath (1991)	0,517	0,004	0,643	0,310
54	Shaver & Scott (1991)	0,027	0,000	0,458	0,078
55	Singer (1991)	0,193	0,000	0,572	0,078
56	Zajac & Bazerman (1991)	1,362	0,548	0,717	1,240
57	Brockner(1992)	0,092	0,043	0,518	0,233
58	Eisenhardt & Zbaracki (1992)	1,098	3,742	0,760	1,783
59	Hart (1992)	1,916	1,681	0,787	1,705
60	Sitkin & Pablo (1992)	0,597	1,119	0,683	0,620
61	Amit & Schoemaker (1993)	0,546	0,260	0,654	0,698
62	Cyert & Williams (1993)	0,124	0,029	0,551	0,155
63	Dutton (1993)	1,599	0,909	0,767	1,163
64	Dutton & Ashford (1993)	1,296	1,179	0,715	1,163
65	Kahneman & Lovallo (1993)	0,398	0,580	0,643	0,775
66	Moussavi & Evans (1993)	0,600	0,099	0,671	0,388
67	Rajagopalan et al. (1993)	1,779	2,578	0,785	1,550

Node	Paper	Eigenvector centrality (%)	Betweenness centrality (%)	Closeness centrality (%)	Degree centrality (%)
68	Stubbart (1989)	0,918	0,537	0,692	0,853
69	Schoemaker (1993)	0,690	0,618	0,737	0,620
70	Simon (1993)	0,167	0,047	0,581	0,155
71	Amason & Schweiger (1994)	0,486	0,067	0,681	0,310
72	Bluedorn et al. (1994)	0,972	0,187	0,683	0,698
73	Chia (1994)	0,271	0,345	0,594	0,620
74	Corner et al. (1994)	1,596	0,415	0,745	1,085
75	Ginsberg (1994)	1,373	0,234	0,754	0,853
76	Priem & Harrison (1994)	0,442	0,839	0,653	0,388
77	Tang & Thomas (1994)	0,178	0,042	0,605	0,233
78	Dess & Priem (1995)	0,553	0,589	0,671	0,620
79	Laroche (1995)	0,580	0,534	0,668	0,775
80	Schwenk (1995)	1,966	4,230	0,837	1,899
81	Walsh (1995)	2,491	2,259	0,829	2,132
82	Bamberger & Fiegenbaum (1996)	0,518	0,128	0,646	0,388
83	Fiegenbaum et al. (1996)	0,700	0,598	0,678	0,698
84	Gunz & Jalland (1996)	0,671	0,058	0,676	0,465
85	Cannella & Monroe (1997)	0,401	0,000	0,631	0,233
86	Child (1997)	0,450	0,683	0,639	0,698
87	Christensen & Fjermestad (1997)	0,190	0,015	0,598	0,155
88	Ocasio (1997)	1,205	0,221	0,735	0,853
89	Cool (1998)	0,206	0,004	0,581	0,155
90	Das & Teng (1999)	1,705	3,315	0,804	1,705

Node	Paper	Eigenvector centrality (%)	Betweenness centrality (%)	Closeness centrality (%)	Degree centrality (%)
91	Forbes & Milliken (1999)	0,777	0,109	0,690	0,543
92	Hillman & Hitt (1999)	0,159	0,000	0,578	0,078
93	McGrath (1999)	0,285	0,275	0,653	0,310
94	Rindova (1999)	1,167	0,587	0,751	0,930
95	Floyd & Lane (2000)	0,909	0,255	0,683	0,853
96	Hendry (2000)	0,893	1,914	0,717	1,240
97	Ashmos et al. (2002)	0,000	0,000	0,000	0,000
98	Brockmann & Anthony (2002)	0,519	0,000	0,658	0,233
99	Farjoun (2002)	0,646	0,403	0,713	0,465
100	Edmondson et al. (2003)	0,373	0,018	0,626	0,233
101	Harries (2003)	0,197	0,006	0,585	0,155
102	Kahneman (2003)	0,127	0,102	0,580	0,388
103	Maulen & Hodgkinson (2003)	0,436	0,000	0,640	0,233
104	Carpenter et al. (2004)	0,591	0,099	0,661	0,543
105	Pozzebon (2004)	0,092	0,801	0,536	0,310
106	Smith & Von Winterfeldt (2004)	0,013	0,000	0,442	0,078
107	Arendt et al. (2005)	0,283	0,002	0,605	0,233
108	Ganster (2005)	0,077	0,054	0,503	0,233
109	Hambrick et al. (2005a)	0,534	1,393	0,653	0,698
110	Hambrick et al. (2005b)	0,040	0,000	0,479	0,155
111	Sinclair & Ashkanasy (2005)	0,093	0,036	0,543	0,155

Node	Paper	Eigenvector centrality (%)	Betweenness centrality (%)	Closeness centrality (%)	Degree centrality (%)
112	Kellermanns et al. (2005)	0,807	0,127	0,703	0,620
113	De Carolis & Saparito (2006)	0,411	0,816	0,623	0,465
114	Elbanna (2006)	0,535	0,752	0,689	0,698
115	George et al. (2006)	0,714	0,084	0,685	0,465
116	Hutzschenreuter & Kleindienst (2006)	2,402	4,356	0,870	2,093
117	Pedraja-Rejas et al. (2006)	0,718	0,187	0,678	0,388
118	Steen et al. (2006)	0,006	0,000	0,409	0,078
119	Cray et al. (2007)	0,185	0,000	0,591	0,155
120	Dane & Pratt (2007)	0,226	0,079	0,585	0,310
121	Denis et al. (2007)	0,121	0,020	0,552	0,155
122	Forbes (2007)	0,000	0,000	0,000	0,000
123	Gavetti et al. (2007)	0,683	0,386	0,735	0,698
124	Hambrick (2007)	0,443	1,549	0,648	0,543
125	Hodgkinson & Clarke (2007)	0,302	0,321	0,616	0,465
126	De Rond & Thietart (2007)	0,287	0,154	0,629	0,388
127	Barnett (2008)	0,404	0,031	0,625	0,310
128	Bryant & Dunford (2008)	0,075	0,004	0,502	0,155
129	Certo et al. (2008)	0,142	0,118	0,591	0,310
130	Gavetti et al. (2008)	0,002	0,000	0,371	0,078
131	Wooldridge et al. (2008)	0,867	0,240	0,696	0,775
132	Chen et al. (2009)	0,255	0,000	0,608	0,155
133	Mazzei et al.	0,086	0,000	0,505	0,078

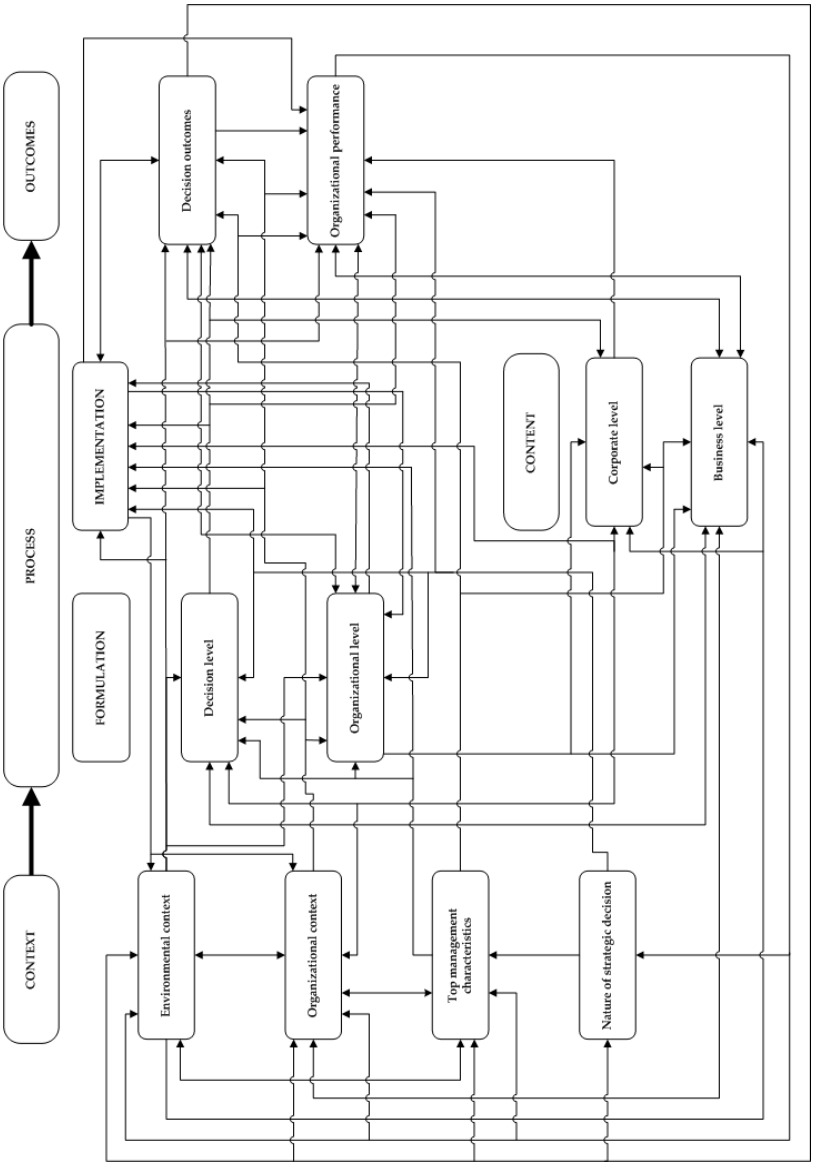
Node	Paper	Eigenvector centrality (%)	Betweenness centrality (%)	Closeness centrality (%)	Degree centrality (%)
	(2009)				
134	Sminia (2009)	0,576	1,865	0,681	0,930
135	Bromiley (2010)	0,105	0,007	0,527	0,233
136	Chiaburu (2010)	0,972	1,016	0,733	0,698
137	Nielsen (2010)	0,424	0,030	0,634	0,388
138	Aharoni et al. (2011)	0,490	0,547	0,692	0,543
139	Cabantous & Gond (2011)	0,521	1,264	0,671	0,930
140	Child & Rodrigues (2011)	0,099	0,116	0,573	0,310
141	Garbuio et al. (2011)	0,714	0,458	0,694	0,620
142	Holmes et al. (2011)	0,257	0,530	0,595	0,775
143	Narayanan et al. (2011)	2,294	2,439	0,819	1,860
144	Raes et al. (2011)	0,715	0,331	0,664	0,775
145	Schiavone (2011)	0,000	0,000	0,000	0,000
146	Segrestin & Hatchuel (2011)	0,029	0,747	0,473	0,155
147	Shepherd (2011)	0,029	0,000	0,473	0,078
148	Powell et al. (2011)	1,334	2,329	0,790	1,473
149	Montibeller & Franco (2011)	0,347	0,735	0,643	0,620
150	Powell (2011)	0,634	0,097	0,678	0,465
151	Comes et al. (2011)	0,156	0,022	0,585	0,155
152	Ge & Yang (2011)	0,219	0,000	0,602	0,078
153	Hodgkinson & Healey (2011)	0,727	0,509	0,689	0,775
154	Hung et al. (2011)	0,795	0,382	0,705	0,620
155	Bowen (1987)	0,229	0,120	0,576	0,388
156	Howard (1988)	0,057	0,003	0,504	0,155

Node	Paper	Eigenvector centrality (%)	Betweenness centrality (%)	Closeness centrality (%)	Degree centrality (%)
157	Keeney (1982)	0,071	0,104	0,530	0,233
158	Levinthal (2011)	0,263	0,042	0,608	0,310
159	Hiller & Hambrick (2005)	0,436	0,156	0,668	0,310

Explanation with Figure A.2

What follows is a short explanation with regard to the figure below, so that readers can interpret it. Regarding the relationships between sets of concepts, there are single headed arrows and double headed arrows. The direction of the arrow indicates the direction of the causality. This means that with single headed arrows, such as the one running from 'corporate level' (content) to 'organizational performance' (outcomes) that at least one study proposed a causal effect from a concept in the set of concepts 'corporate level' on a concept in the set of 'organizational performance.' Double headed arrows, such as the one running between 'environmental context' (context) and 'organizational context,' indicate that there is at least one study proposing that there is a causal effect of 'environmental context' on 'organizational context, and vice versa. However, these two causal effects need not be from the same study. Just as with the sets of concepts, the relationships have not been adjusted in size for the number of times a relationship was researched. It would have also made the figure more unwieldy as more lines would be needed in order to distinguish between the weights of what are now double headed arrows, as these need to be isolated. Figure A.2 only incorporates direct effects for the same reasons; including the moderator effect would require for the double headed arrows to be split in two single headed arrows. In case the moderating effect comes from a different set of concepts, all would need to be split up further. Hence, Figure A.2 is a simplified and incomplete representation of the mapping exercise.

Figure A.2 *Recast integrative framework of strategic decisions based on 159 synthesizing papers (direct effects only)*



APPENDIX B: DATA COLLECTION, SURVEY (DUTCH) AND TOPIC LIST (ENGLISH)

The research consists of one literature-based chapter and three empirical chapters. The literature-based chapter (Chapter 2) builds on 159 conceptual studies in the SDM field. The 'data' collection for that chapter has been described in Appendix A.

The empirical chapters on the influence of the social networks of decision makers on the decision nerve center and decision process outcomes (Chapter 3 & Chapter 4) are based on a dataset that was acquired from EIM Business Policy and Research, which carried out a cross-sectional survey commissioned by the Dutch Ministry of Economic Affairs. The aim of this data collection was to collect descriptive statistics and explore how decisions in small and medium sized enterprises (SMEs) are made. It focused on entrepreneurs in small enterprises who had made at least one important decision in the past three years. Note that entrepreneurs in the Dutch context are often used interchangeably with small business owners, so small business owners were also included in the sample. The decision could be related to any innovation or project that was out of the daily routine and that was perceived to be important. A broad set of questions was included in the survey regarding the characteristics of the individual entrepreneur and the decisions. The data were collected through Computer-Assisted Telephone Interviewing among 1203 SMEs within the Netherlands. The sample was limited to entrepreneurs in firms with no more than 100 employees (in FTEs). Respondents were sampled across eight industries (manufacturing, construction, trade, hotel and catering, transport, financial services, business services and personal services). The firms were equally distributed across the industries. All respondents were responsible for the management of the day-to-day business and the strategic decisions of the firm. Vermeulen and Curşeu (2008) note that this dataset is not fully representative of the small-business population in the Netherlands. Some industries are overrepresented or underrepresented in the sample due to the fact that the sampling was aimed at the equal distribution of firms across industries. This implies that the data cannot be considered reliable estimations for the population. However, for the goal of the present study, this is not considered problematic, as the aim was to find out how the decision nerve center and decision process outcomes were affected by social networks of decision

makers and their assessment of the decision situation under the moderation of the topic of decision, and the type of service organization. Not all 1203 respondents could be used in the analyses for Chapters 3 and 4, because of incomplete data and the properties of the moderating variables. Given that the respondents were sampled across several industries, not all of them were service organizations obviously.

The empirical chapter on how type of decision maker and the cognitive motivational trait need for cognition affect information search behavior in the social networks of decision makers was based on data gathered by means of a cross sectional survey (see Appendix C for the survey). This survey was developed to gather data about the characteristics and relational setting of key decision makers in SMEs and large organizations. It was designed to capture more aspects than are modeled and used in Chapter 5. Before the survey was sent out, a pilot was conducted. Three respondents (one entrepreneur in audio/video installation, one director of a medium-sized consultancy organization and one creative director/co-founder of a marketing & communication agency) tested the initial questionnaire. Two respondents had an academic education and were still active in academia in addition to their other jobs. The third respondent had an arts background. Their average completion time was 25 minutes, and suggestions were made to considerably improve the flow and understandability of the questionnaire. The suggestions were considered and implemented in the survey.

In order to distinguish between SMEs and large organizations, a threshold of 100 employees (measured in FTEs) was maintained. The survey was distributed to organizations that were either in retailing, business services or personal services. The sample was a convenience sample, as the survey was administered to respondents that were accessible to students in a course on Strategic Decision Making. They had to administer the survey to both a key decision maker in a SME and in a large organization as defined above. Next to the survey, they also needed to conduct a semi-structured interview (see Appendix C for the topic list). For the students, the completion of a research assignment was attached to this standardized measurement instrument, leading them to also select other sectors than the ones intended. The average size is 1820 full-time equivalents, 3020 employees. Given that the range of organizational size runs from 0 to 180.000 and 0 to 350.000 for full-time equivalents and number of employees respectively, it can be concluded that the data include really small organizations (just one entrepreneur) up until multinationals. The same limitation to the entrepreneur

label as with the dataset for Chapters 3 and 4 needs to be noted; in a Dutch context entrepreneur is often used interchangeably with small business owner. The data were gathered in 2008 and 2009 and a total of 389 decision makers were reached, of which 194 entrepreneurs and 195 managers. Data were not complete for all respondents, thus limiting the number of cases that could be entered in Chapter 5.

Please note that the questionnaire presented on the following pages was originally printed on A4-sized paper. The original lay-out had to be adjusted for this Appendix. Also, question 16 en 17 from the survey have been included in abbreviated form. In the original survey, questions 16 en 17 had more pages than the one page included here. The other pages replaced the actors that could be tied to the statements. These other pages were identical, save for the actors, and thus serve no additional purpose. If you are interested in seeing these pages or the survey in its original form, please contact the author.

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VRAGENLIJST

OVER STRATEGISCHE BESLUITVORMING

Deelname aan dit onderzoek is <u>vertrouwelijk en anoniem</u>. Informatie over individuele antwoorden wordt aan niemand meegedeeld.

In te vullen door student:

Naam:

ANR:

Ondernemer / Manager *(doorhalen wat niet van toepassing is)*

Lees deze instructies aandachtig alvorens de vragenlijst in te vullen.

Beste deelnemer/deelneemster,

We willen u vragen deze vragenlijst in te vullen. Het beantwoorden van de vragen neemt ongeveer 35 minuten in beslag. De vragenlijst maakt deel uit van een onderzoek naar strategische besluitvormingsprocessen in het MKB en grotere organisaties. Doel van het onderzoek is om meer te weten te komen over het gebruik van sociale netwerken bij het nemen van strategische besluiten in kleine en grotere organisaties. Wij onderzoeken zogenaamde beslissingsepisodes. Dit zijn periodes die lopen vanaf het moment dat uw organisatie en/of u als besluitvormer zich bewust is van het feit dat er een groot, bepalend en belangrijk besluit genomen moet worden tot het moment waarop het besluit genomen is. U, als strategische besluitvormer, bent onze belangrijkste informatiebron en alleen u kunt van dit onderzoek een gefundeerde studie maken.

Uw deelname aan dit onderzoek is uitermate belangrijk!

Let wel: de vragenlijst is enkel aan de voorzijde bedrukt. De lijst bestaat uit 19 vragen met meerdere items per vraag. Sommige vragen zijn uitgespreid over meerdere pagina's. Alle vragen hebben betrekking op uw ervaringen met het strategische besluit waarover u in het interview heeft verteld. Er zijn geen 'goede' of 'foute' antwoorden: het is uw mening die telt. U kruist het passende antwoord aan op volgende wijze:

Voorbeelden:

1. Bent u....?
☒ vrouw
□ man

2. In welke mate bent u het eens met de onderstaande uitspraak?	Helemaal niet mee eens	Eerder niet mee eens	Deels eens, deels oneens	Eerder mee eens	Helemaal mee eens
Ik ben gelukkig met mijn werk.	1	2	3	(4)	5

We willen benadrukken dat deelname aan dit onderzoek **anoniem** is: alle gegevens worden vertrouwelijk behandeld en informatie over individuele antwoorden wordt niet verspreid. De gegevens worden gebruikt voor wetenschappelijke doeleinden. Wij bieden u aan de resultaten van dit onderzoek te sturen als u daar interesse in hebt. Dit zal bestaan uit een vergelijking van uw resultaten uit de vragenlijst met de resultaten van uw sector en het gehele onderzoek. Daartoe vult u uw contactgegevens in aan het einde van de vragenlijst en geeft aan dat u interesse hebt in een resultatenvergelijking en overzicht. De looptijd van het onderzoek is tot en met voorjaar 2010, dus u kunt het rapport rond de zomer van 2010 verwachten. Vanzelfsprekend wordt u dit kosteloos aangeboden en toegezonden. Indien u vragen of opmerkingen heeft bij deze vragenlijst of indien u meer informatie wenst over de studie, aarzel niet om contact op te nemen met:

Drs. Rob Jansen
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Alvast bedankt voor uw medewerking!

I. Personalia

1. Wat is uw leeftijd? _____ jaar

2. U bent… ❑ vrouw

❑ man

3. Wat is uw hoogst behaalde onderwijsdiploma?

❑ Geen diploma
❑ Basisschool
❑ VMBO (VBO, MAVO)
❑ Speciaal Voortgezet Onderwijs (Voortgezet speciaal onderwijs, WEB-assistentenopleiding)
❑ HAVO, VWO (incl. gymnasium)
❑ MBO
❑ WEB Basisberoepsopleiding (Middenkaderopleiding, vakopleiding)
❑ Verkort Hoger Beroepsonderwijs (WEB specialistenopleiding, Enkeljarig HBO)
❑ HBO
❑ Universiteit
❑ Post-HBO
❑ Post-Doctoraal (Business school etc.)
❑ Gepromoveerd (Doctor, PhD)
❑ Andere: nl_____

4. Sinds wanneer werkt u voor uw organisatie? Sinds _____

5. Werkt u al sinds de oprichting van de organisatie voor uw organisatie?
❑ ja
❑ nee

6. Bent u de oprichter of één van de oprichters van uw organisatie?
❑ ja Indien ja, hoeveel mede-oprichters waren er inclusief uzelf? _____ oprichters
❑ nee

7. Waarvoor bent u eindverantwoordelijke in de organisatie waar u werkzaam bent? (meerdere opties mogelijk)

❑ Voor de gehele organisatie
❑ Voor de financiën
❑ Voor de marketing
❑ Voor het personeel (HRM)
❑ Voor de productie
❑ Voor research & development
❑ Anders, namelijk

II. De organisatie

8. Hoeveel werknemers zijn er (ongeveer) bij uw organisatie werkzaam?
(Inclusief werknemers met een arbeidscontract bij een andere organisatie, zoals bijvoorbeeld uitzendkrachten en consultants)

[ ] Werknemers

9. Hoeveel fulltime equivalents (fte) zijn er (ongeveer) bij uw organisatie werkzaam?

[ ] fte

10. Kijkend naar de komende drie jaar, verwacht ik dat het personeelsbestand van deze organisatie …

- ❑ Gaat groeien.
- ❑ Hetzelfde blijft.
- ❑ Kleiner wordt.

11. In welke industrie/sector is de organisatie actief?

- ❑ Zakelijke dienstverlening
- ❑ Detailhandel
- ❑ Persoonlijke dienstverlening (bv. kapperszaak, hypotheekadviseur)
- ❑ Anders, nl. _____

De vragen 13 tot en met 17 gaan over de specifieke belissingsepisode uit het interview.

Kunt u het besluit kort omschrijven?

_____

Kunt u aangeven, uitgedrukt in een percentage, hoeveel macht, autoriteit, en autonomie u had gedurende de beslissingsepisode?

_____ %

III. Het besluitvormingsproces

De volgende vragen hebben betrekking op de personen/partijen die betrokken waren bij het specifieke strategische besluit dat u hebt besproken in het interview. Onder betrokken wordt verstaan dat ze een bijdrage geleverd hebben aan het besluitvormingsproces of aan het besluit in de beslissingsepisode. De vragen in dit deel van de vragenlijst zullen ingaan op uw relatie in algemene zin met deze betrokken partijen. Daarnaast wordt ook een aantal zaken omtrent de bijdrage van de belangrijkste partij uit deze verschillende groepen op het besluit dat in het interview besproken is, bevraagd. De eerste vraag gaat in op het strategische besluit uit het interview, waarna verder gegaan wordt met vragen over de verschillende partijen:

13. Geef aan in welke mate u het eens bent met de volgende uitspraken over het strategische besluit.	Helemaal mee eens	Eerder mee eens dan niet	Deels eens, deels oneens	Eerder oneens dan eens	Helemaal mee oneens
a) Het besluit heeft geleid tot het resultaat dat ik vooraf verwachtte.	1	2	3	4	5
b) Het besluit heeft geleid tot meer omzet.	1	2	3	4	5
c) Het besluit heeft geleid tot meer winst.	1	2	3	4	5
d) Ik ben tevreden met deze beslissing.	1	2	3	4	5
e) Het besluit is minder effectief vergeleken met eerdere strategische besluiten.	1	2	3	4	5
f) Het resultaat van het besluit voldoet aan de verwachtingen.	1	2	3	4	5

Toelichting bij het invullen van de vragen 14 tot en met 16:

Bij het nemen van besluiten zullen besluitnemers andere partijen uit hun sociale netwerk (moeten) betrekken. Onder sociaal netwerk wordt verstaan **een netwerk van mensen die als individu of als vertegenwoordiger van bijvoorbeeld een bedrijf met elkaar in contact staan** om advies uit te brengen, samen te werken of anderszins een sociale relatie met elkaar hebben die **niet noodzakelijkerwijs een verplichte relatie is**. Besluitnemers zullen bijvoorbeeld medewerkers om achtergrondinformatie vragen of externe investeerders om toezeggingen omtrent financiële middelen verzoeken, om een bepaald besluit te kunnen nemen of vorm te geven.

De volgende vragen gaan in op de partijen die een bijdrage geleverd hebben aan het strategische besluit uit het interview. Deze partijen zijn individuele partijen, wat wil zeggen dat bijvoorbeeld uitvoerend personeel bestaat uit een x-aantal personeelsleden en concurrenten bestaan uit een
x-aantal bedrijven die als concurrent gekenmerkt kunnen worden. **Een voorbeeld:**

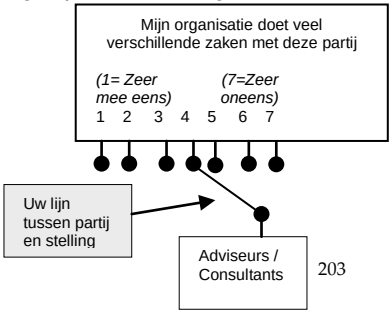
- Als u één of meerdere personeelsleden in uw sociale netwerk heeft, dan is dit het aantal dat u bij 14i invult, niet het totaal aantal ondergeschikten of het totaal aantal personeelsleden in uw organisatie. Enkel degenen waar u mee in contact staat!
- Als één of meerdere personeelsleden een bijdrage hebben geleverd aan het besluit uit het interview dan is dat het aantal dat u invult bij 14ii.
- Als laatste vult u bij 14iii de duur van uw relatie met het personeelslid in dat *de belangrijkste bijdrage* heeft geleverd aan het besluit dat beschreven is in het interview. Met andere woorden, hoe lang zit deze specifieke partij in uw sociale netwerk? Het kan zijn dat twee personeelsleden een bijdrage geleverd hebben als 'kennis/ expertise', fysieke middelen, maar dat bijvoorbeeld de hoogst opgeleide collega de belangrijkste bijdrage uit die groep geleverd heeft, namelijk de 'kennis/ expertise'. De duur van de relatie met die collega is dan hetgeen u invult.

Bij vraag 16 en 17 gaat u vervolgens uit van die ene persoon/ dat ene contact van die partij uit het totale aantal partijen. U gaat uit van degene die de belangrijkste bijdrage heeft geleverd in de beslissingsepisode.

14. Geef voor de volgende partijen aan: i. hoeveel van deze partijen zich in uw sociale netwerk bevinden; ii. hoeveel van deze partijen uit uw sociale netwerk een bijdrage geleverd hebben aan het besluit uit het interview; iii. hoe lang u een relatie hebt met deze partijen die een bijdrage geleverd hebben aan het besluit.		14i. Aantal aanwezig in uw totale sociale netwerk (vul 0 in indien afwezig in uw sociale netwerk)		14ii. Aantal partijen uit uw sociale netwerk dat een bijdrage aan het besluit geleverd hebben (vul niets in indien er geen bijdrage geleverd is door deze partijen)		14iii. Duur van uw relatie met de partij die de belangrijkst bijdrage geleverd heeft (vul niets in indien er geen bijdrage is geleverd door deze partijen)
vb.	*Oud-studiegenoten*	*2*		*1*		*20 jr.*
a)	Uitvoerend personeel					____ jr.
b)	Directieleden					____ jr.
c)	Ondersteunende staf (bv. human resources, IT, personeelszaken)					____ jr.
d)	Middenkader					____ jr.
e)	Externe investeerders					____ jr.
f)	Adviseurs/ Consultants					____ jr.
g)	Concurrenten					____ jr.
h)	Leveranciers					____ jr.
i)	Verenigingen (bv. Lion's Club, alumninetwerk, MKB Nederland, KvK, Orde v. Organisatieadviseurs, etc.)					____ jr.
j)	Externe samenwerkingspartners					____ jr.
k)	Consumenten/Afnemers					____ jr.
l)	Levenspartner					____ jr.
m)	Familieleden					____ jr.
n)	Kennissen/ Vrienden					____ jr.

Vanaf vraag 15 zijn de pagina's gekanteld, en op zogenaamde landschapmodus weggezet. Om de tekst goed te kunnen lezen kunt u het beste de vragenlijst een kwartslag met **de richting van de klok meedraaien**.

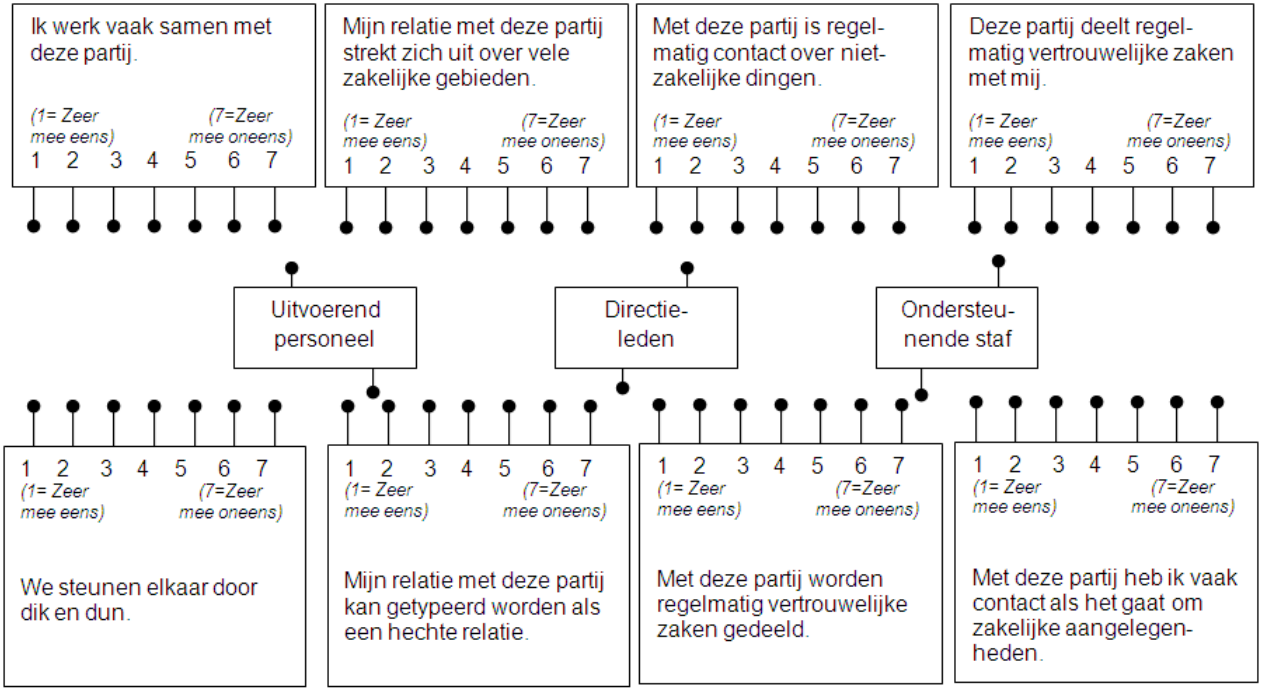
Vraag 16 en 17 zijn over meerdere pagina's uitgespreid en bevatten de verschillende partijen die u bij 14 ook ziet. De bij vraag 14 geselecteerde partijen (die partijen die een bijdrage leverden aan het besluit uit het interview) komen daar terug. De partijen staan op de middelste rij van het blad, en u kunt elke geselecteerde partij nu koppelen aan de verschillende stellingen. De koppeling vindt plaats tussen de stelling (de mate waarin u het eens bent met de stelling) en de geselecteerde partij. Door een (zo recht mogelijke) **lijn te trekken** tussen het uitstekende bolletje bij de stelling naar de geselecteerde partij legt u de relatie. Trek de lijn vanaf het bolletje dat het beste weergeeft in welke mate u het eens bent met de stelling. Door met de klok mee te werken voorkomt u dat u stellingen overslaat. Lees op elke pagina het bovenschrift achter het vraagnummer. Hiernaast ziet u een voorbeeld:



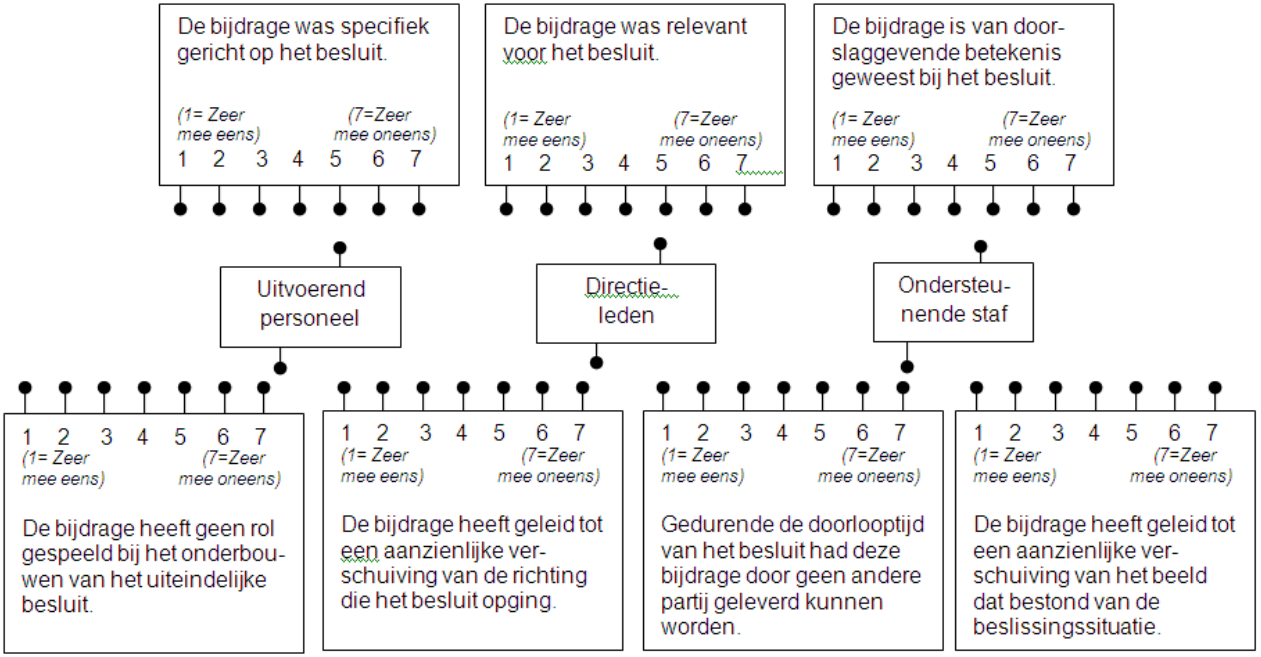
15. Geef aan welke partijen gedurende het besluitvormingsproces (zie vraag 14) welke bijdrage hebben geleverd. Kies per partij <u>alleen</u> de belangrijkste bijdrage. U hoeft niet op elke regel iets in te vullen, enkel bij de partijen die een bijdrage geleverd hebben. U vult dus één bijdrage in.

		Achtergrond-informatie	Ondersteunende procedure	Instemming/ Goedkeuri	Financiële middelen	Kennis/ Expertise	Fysieke middelen	Mentale/ Emotionele steun
a)	Uitvoerend personeel	❑	❑	❑	❑	❑	❑	❑
b)	Directieleden	❑	❑	❑	❑	❑	❑	❑
c)	Ondersteunende staf (bv. human resources, IT, personeelszaken)	❑	❑	❑	❑	❑	❑	❑
d)	Middenkader	❑	❑	❑	❑	❑	❑	❑
e)	Externe investeerders	❑	❑	❑	❑	❑	❑	❑
f)	Adviseurs/ Consultants	❑	❑	❑	❑	❑	❑	❑
g)	Concurrenten	❑	❑	❑	❑	❑	❑	❑
h)	Leveranciers	❑	❑	❑	❑	❑	❑	❑
i)	Verenigingen (bv. Lion's Club, alumninetwerk, MKB Nederland, KvK, Orde v. Organisatieadviseurs, etc.)	❑	❑	❑	❑	❑	❑	❑
j)	Externe samenwerkingspartners (bv. kenniscentra, sociale werkplaats, maatschappelijke organisaties, universiteiten)	❑	❑	❑	❑	❑	❑	❑
k)	Consumenten/Afnemers	❑	❑	❑	❑	❑	❑	❑
l)	Levenspartner	❑	❑	❑	❑	❑	❑	❑
m)	Familieleden	❑	❑	❑	❑	❑	❑	❑
n)	Kennissen/ Vrienden	❑	❑	❑	❑	❑	❑	❑

16. (1) Hieronder staat een aantal stellingen die betrekking hebben op de relatie met de partijen genoemd bij vraag 15. Trek voor elke stelling van het bolletje dat correspondeert met de mate waarin u het eens bent met de stelling een lijn naar de partij die door u bij vraag 15 geselecteerd is en hieronder weergegeven is. U trekt dus voor elke stelling een lijn naar de betreffende partij, waarbij u de partij voor ogen houdt die de belangrijkste bijdrage leverde in de beslissingsepisode (zie onder vraag 14 (p. 6) voor een visueel voorbeeld).



17. (1) Hieronder staat een aantal stellingen die betrekking hebben op de bijdrage(n) aan het besluitvormingsproces in de beslissingsepisode. Trek voor elke stelling van het bolletje dat correspondeert met de mate waarin u het eens bent met de stelling een lijn naar de partij die door u bij vraag 15 geselecteerd is en hieronder weergegeven is. U trekt dus voor elke stelling een lijn naar de betreffende partij, waarbij u de partij voor ogen houdt die de belangrijkste bijdrage leverde in de beslissingsepisode (zie onder vraag 14 (p. 6) voor een visueel voorbeeld).



IV. De besluitvormer

De volgende vragen gaan over u als persoon. De vragen hebben niet alleen betrekking op uw werk of functie, maar op u als persoon in het algemeen.

18. Geef aan in welke mate u het eens bent met de volgende uitspraken.		Helemaal mee eens	Eerder mee eens dan niet	Deels eens, deels oneens	Eerder oneens dan eens	Helemaal mee oneens
a)	Ik voel opluchting in plaats van tevredenheid na het afronden van een taak die veel mentale inzet heeft vereist.	1	2	3	4	5
b)	Ik bevind me regelmatig in overleg over dingen, ook al zijn ze niet belangrijk voor mij persoonlijk.	1	2	3	4	5
c)	Op de lange termijn kan men meer bereiken door het oplossen van kleine, simpele problemen dan door het oplossen van grote, complexe problemen.	1	2	3	4	5
d)	Een persoon die een gelijkmatig, normaal leven leidt waarin weinig verrassingen of onverwachte gebeurtenissen plaatsvinden, heeft echt veel om dankbaar voor te zijn.	1	2	3	4	5
		Helemaal mee eens	Eerder mee eens dan niet	Deels eens, deels oneens	Eerder oneens dan eens	Helemaal mee oneens
e)	Een expert die niet met een definitief antwoord komt, weet waarschijnlijk niet zo veel.	1	2	3	4	5
f)	Ik houd meer van feestjes waarbij ik de meeste mensen ken dan van feestjes waar alle of bijna alle mensen complete vreemden zijn.	1	2	3	4	5
g)	Ik geef de voorkeur aan een taak die intellectueel, moeilijk en belangrijk is ten opzichte van een taak die enigszins belangrijk is maar weinig denkwerk vereist.	1	2	3	4	5
h)	Ik denk liever na over kleine, dagelijkse projecten dan over lange termijn projecten.	1	2	3	4	5
		Helemaal mee eens	Eerder mee eens dan niet	Deels eens, deels oneens	Eerder oneens dan eens	Helemaal mee oneens
i)	Een goede baan is een baan waarbij het altijd duidelijk is wat er gedaan moet worden en hoe het gedaan moet worden.	1	2	3	4	5
j)	Ik geef de voorkeur aan complexe problemen ten opzichte van simpele problemen.	1	2	3	4	5
k)	Dat wat we gewend zijn heeft altijd de voorkeur boven wat onbekend is.	1	2	3	4	5
l)	Ik probeer situaties te vermijden waarbij de kans groot is dat ik diep over iets moet nadenken.	1	2	3	4	5

19. Geef aan in welke mate u het eens bent met de volgende uitspraken.		Helemaal mee eens	Eerder mee eens dan niet	Deels eens, deels oneens	Eerder oneens dan eens	Helemaal mee oneens
a)	Ik zie mijn leven het liefst gevuld met puzzels die ik moet oplossen.	1	2	3	4	5
b)	Ik vind taken die nieuwe oplossingen voor problemen vereisen erg leuk.	1	2	3	4	5
c)	Nadenken is niet mijn idee van plezier hebben.	1	2	3	4	5
d)	Ik doe liever iets dat weinig denkwerk vereist dan iets dat zeker mijn denkvaardigheden op de proef stelt.	1	2	3	4	5
e)	Ik haal voldoening uit een stevig overleg dat vele uren duurt.	1	2	3	4	5
		Helemaal mee eens	Eerder mee eens dan niet	Deels eens, deels oneens	Eerder oneens dan eens	Helemaal mee oneens
f)	Ik denk alleen zo hard na als nodig is.	1	2	3	4	5
g)	Ik houd van taken die weinig denkwerk vereisen nadat ik ze eenmaal heb geleerd.	1	2	3	4	5
h)	Het idee te moeten vertrouwen op mijn denkvermogen om de top te bereiken, trekt me aan.	1	2	3	4	5
i)	Het leren van nieuwe manieren van denken trekt mij niet zo aan.	1	2	3	4	5
		Helemaal mee eens	Eerder mee eens dan niet	Deels eens, deels oneens	Eerder oneens dan eens	Helemaal mee oneens
j)	Abstract denken spreekt mij erg aan.	1	2	3	4	5
k)	Ik heb graag de verantwoordelijkheid in situaties die veel denkwerk vereisen.	1	2	3	4	5
l)	Het is voor mij voldoende te weten dat iets de taak volbrengt. Het maakt mij niet uit hoe of waarom het werkt.	1	2	3	4	5
m)	Er bestaat geen probleem dat niet opgelost kan worden.	1	2	3	4	5

Vult u alstublieft uw contactgegevens in, ook al hebt u geen interesse in een vergelijking tussen uw antwoorden en het gemiddelde van uw sector. Wij gebruiken deze gegevens alleen om met u in contact te treden voor het rapport of indien er naar aanleiding van de vragenlijst problemen ontstaan zijn (bijvoorbeeld zaken die onleesbaar geworden zijn doordat er iets mis is gegaan met de post). De adresgegevens worden op geen enkele andere wijze gebruikt.

Naam :_____
Tel. Nummer :_____ Wil graag een rapport ontvangen: ❑ ja
Mailadres :_____ ❑ nee

Hartelijk bedankt voor het invullen van deze vragenlijst!

TOPIC LIST INTERVIEWS

Personal information
Would you please provide a short description of yourself?
Possible follow-up questions:
How would you describe yourself?
What are your weak and strong points?
How could you describe your role as a superior/ leader?
What is your experience with founding organizations or starting new business/organizational activity?

Organization
Would you please provide a short description of your organization?
Possible follow-up questions:
How did the organization become as it is now?
What does the organizational structure look like??
How would you describe the organizational culture of the organization?

The decision
You indicated that you made the decision to ... and you have qualified it as one of the most impactful decisions in the past year (if no impactful decision in past year: stick to a period of three years). Could you describe this decision in short?
Possible follow-up question:
Why is this specific decision of such a high impact to you?
What was the time period in which this decision was taken and was it a special period?

Motivation
How did you get the idea for this decision?
Possible follow-up question:
What did you see in the idea?
Did you have any doubts towards the idea? If so, can you describe these doubts?
Did you also have alternative ideas? If so, what were they?
Did you search for information? If so, of what did it consist?
How did other people influence the idea?

Start of decision making process
At what moment did you actively start to develop the idea?
Possible follow-up questions:

How long did you have this idea before you acted upon it?
What was the reason to act upon the idea at that time?
What was the first step or move you made?
How attractive was the idea at that time?

Course of the decision making process
How did the development of your idea go?
Possible follow-up questions:
Which alternatives were available to develop the idea?
Which information were you after?
Which role did other people play in this?
What was the role of advisors? How did they do their work?
What was the role of the government, if any?
Which obstacles did you encounter? How did you deal with those?
What were the signals you got from others regarding your idea, if any?
- Where there noticeable moves for or against your decision?

Did these signals and moves compromise your idea, from your perspective? To what extent did these signals/moves affect the result?

Decision
At what moment was the final decision made?
Possible follow-up questions:
What was the point of no return for this decision that you could not turn back?
Did you sign a contract? If so, can you describe it in more detail?
What were the risks you took by making this decision?
What was the decisive motive?
What did you do to implement the decision?

Implementation
In what way was the decision implemented eventually?
Possible follow-up questions:
How successful was the implementation according to you?
If I were to ask your co-workers how successful the implementation was, what would be their answer according to you?

Recap and results
How do you evaluate the decision making process in hindsight?
Possible follow-up questions:
How satisfied where with the decision that was taken?

What have been the results so far?
In hindsight, would you have done anything different?
What was the most important moment for you?

Has there been any other important decision made by you in the past three years? If so, could you describe them?
Possible follow-up questions::
Did you happen to also make a decision to not implement a plan? If so, what was it about?
Why did you decide not to go through with it?

Are there perhaps any other matters that have not been talked about in this interview that you would like to talk about, as in that they would be relevant for my research?

PAGE FOR NOTES